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A SURVEY AND COMPARISON OF YOUTH FITNESS 1958-1965.
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PHYSICAL FITNESS TESTS WERE CONDUCTED ON PUPILS THROUGHOUT THE COUNTRY. THE PUPILS SELECTED WERE ADMINISTERED THE YOUTH FITNESS TEST, AND THE RESULTS REPRESENTED THE BEST AVAILABLE DATA IN THE FIELD. THE RESULTS WERE CODED AND STATISTICAL ANALYSES MADE. THE GENERAL CONCLUSION DRAWN FROM THE RESULTS INDICATED THAT THE PHYSICAL FITNESS LEVEL OF PUBLIC SCHOOL CHILDREN, GRADES 5 TO 12, IN 1965 WAS ABOVE THAT OF SIMILAR TESTS CONDUCTED IN 1953. THE ULTIMATE OBJECTIVE OF A PHYSICAL FITNESS PROGRAM IS SUGGESTED TO BE THE SENSITIZING OF THE PUPIL TO THE NEED FOR MAINTAINING A PHYSICAL FITNESS LEVEL THROUGHOUT LIFE. (RS)

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U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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Cooperative Research Project No. 2418

Paul A. Hunsicker
Guy G. Reiff

The University of Michigan
Ann Arbor, Michigan

1965

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In Dedication

To the hundreds of school personnel and thousands of subjects whose interest and efforts made this study possible.

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Chapter I

Background

The function of this report is to survey the current state of physical fitness of United States public school children, grades 5 through 12, and make a comparison with similar data collected during the school year 1957-58.

The need for the investigation became apparent when numerous directors of physical education remarked that the 1958 fitness norms were too low. While the comments probably represented a biased sample since it is a rarity for a director to admit that his pupils are below the national average, it was nonetheless timely to re-evaluate status.

The problem of physical fitness in youth is by no means new to this generation and statements deploring the lack of fitness can be traced to the colonial period in American history. Public interest has invariably waxed and waned with the state of the nation. In times of war, interest runs high and during years of peace interest falls off. A brief overview of factors influencing public interest in physical fitness during the past fifteen years will be reported.

Within the short period of five years following the close of World War II the United States was once again faced with the challenge of sending men to the field of battle in Korea. The increase in the number of men selected for the draft and the resulting rejection rate gave cause for concern. While it may be argued that many rejectees were not taken for reasons other than a lack of fitness, few would deny the desirability of having recruits physically fit! The Korean War contained another unsavory incident, namely; the questionable behavior of some of the prisoners of war. In 1955, as a direct result of this it became necessary for President Eisenhower to write Executive Order 10631 specifically spelling out the expected conduct for prisoners of war. Our experience in the Korean War undoubtedly aided in establishing a receptive climate for subsequent events in the field of physical fitness.

Late in 1953, Kraus and Hirschland published a paper which probably did more to revitalize interest in fitness than any single report. Their research indicated a failure rate on a minimum muscular fitness test of approximately 58 per cent by American children in contrast to a failure rate of approximately 9 per cent by Austrian, Italian and Swiss children. Although some investigators questioned the validity of the test and the sampling techniques the study received nation-wide publicity and the public owes Kraus and his colleagues a debt of gratitude for sensitizing them to the lack of fitness in youth.

One course of action which resulted from the Kraus findings was President Eisenhower's creation of a President's Council on Youth Fitness by executive order (the name was subsequently broadened to the President's Council on Physical Fitness). This came into existence in September, 1956.

In this same month the American Association for Health, Physical Education, and Recreation was host to a national meeting held in Washington which was devoted to the problem of physical fitness. The deliberations lasted several days and one recommendation was to conduct a national survey of youth fitness.

A meeting of selected members of the Research Council of the AAHPER met in February, 1957 in Chicago. The participants were fully conscious of their charge and the possible pitfalls. The pressing need for a nation-wide survey of youth fitness served as a constant reminder to those in attendance that agreement on a test battery was of paramount importance.

The Council members used the following guidelines in the development of the Youth Fitness Test:

1. Select tests which give an indication of various components of physical fitness, for instance, the 50-yard dash as an indicator of speed; the 600-yard run as an indicator of endurance; the pull-ups as an indicator of arm and shoulder strength, etc.
2. Select tests which require little or no equipment.
3. Select tests which could be used for both boys and girls (one exception being the pull-ups where a modified pull-up was proposed for the girls).
4. To minimize the problem of communication with the pupils restrict the sample to grades 5 through 12.
5. Select tests which could be used through the entire age range - grades 5 through 12.

With the above stipulations in mind, the Council members agreed on a test battery consisting of: pull-ups (for boys), modified pull-ups (for girls), sit-ups, standing broad jump (long jump), shuttle run, 50-yard dash, softball throw for distance and the 600-yard run.

To implement the survey, the present writer was designated as Director of the Youth Fitness Project and the American Association for Health, Physical Education, and Recreation assumed the cost of the 1957-58 survey. Incidentally, this was the first national survey of physical fitness conducted on youth in the United States.

During the spring and summer of 1957, the Director met with members of the Survey Research Center at the University of Michigan to plan the drawing of a nation-wide sample. A multi-staged probability sample designed to be representative of all boys and girls in the public schools of the United States in grades 5 through 12 was chosen. To give every pupil a theoretical possibility of being drawn into the sample, the home rooms were used as a basis of selecting the testees. While this created some difficulties in administering the tests it did assure the investigators of being able to generalize about the total public school population, grades 5 through 12.

The description of the tests and the final results of the survey appear in the Youth Fitness Test manual published by the AAHPER in 1958.

The test battery was widely adopted by school systems and it has been estimated that well over 25 million pupils have been tested between 1957 and 1965 via the Youth Fitness Test. The support of the American Association for Health, Physical Education, and Recreation plus the fact that the President's Council on Physical Fitness adopted the test accounted for the popular acceptance of the test battery. The novel opportunity of a school administrator being able to compare his pupils in physical fitness with a national norm undoubtedly added another lure to the test. Prior to 1958 this would have been impossible!

The extent of the usage of the Youth Fitness Test was not limited to the United States. British investigators compared the fitness of their school children with the data from the United States and in almost each test item the British youngsters' test scores were higher. Analyses of the results showed the British youngsters as having greater shoulder girdle strength, superior agility, greater abdominal strength, more leg explosive power and more endurance. The American scores surpassed the British in the softball throw, a skill rarely practiced by British children. Similar comparisons with Japanese children were equally disquieting. While some question could be asked regarding the samples drawn abroad the results were not very impressive from an American viewpoint!

Practically all the test items in the battery are susceptible to changes in the training program of the pupil. When a physical education program includes heavy dosages of physical fitness type activities the pupils' test scores on the Youth Fitness Test will reflect these changes in condition. With the recent interest in youth fitness in the United States one would expect test scores in this field to improve. Whether they have or not is one of the prime concerns of the investigation.

NATURE AND SCOPE OF THIS RESEARCH

The investigation will be concerned with determining the present level of physical fitness of boys and girls in the public schools of the United States, grades 5 through 12. Answers to the following questions will be sought:

1. How does the present level of fitness compare with data taken during the 1957-58 school year?
2. How does the average score for each of the seven fitness tests vary from grades 5 through 12?

3. Does the same pattern of mean scores exist for both boys and girls from grades 5 through 12?

4. What are the interrelationships between the various tests and are these similar at the different age levels?

5. How does a sub-sample of Alaskan school children compare on the fitness test with the scores from the coterminous United States?

6. How does the present level of fitness of United States youth compare with available scores from Great Britain?

The general design of the research will be to administer the Youth Fitness Test to a representative sample of school children in the public schools of the United States in grades 5 through 12. These data will be compared with similar test results taken in the national survey of 1957-58. A separate sub-sample of pupils in Alaskan schools will also be tested. These results will be treated as a sub-sample since Alaska was not a state when the first survey was completed in 1958. All data will be punched on IBM cards and analyses done on IBM computers. The details of the research design and the statistical treatment of the data will be covered in subsequent chapters.

Chapter II

Methodology

This chapter will deal with a detailed description of the physical fitness tests, the multi-staged probability sample used, the method of orienting school personnel involved in the administration of the tests and the manner in which the test data were collected and handled. Since the Alaskan schools were handled as a sub-sample a description of the method of selection of these testees will be added.

SELECTION AND DESCRIPTION OF TEST BATTERY

Since only one previous nation-wide survey of youth fitness had ever been conducted the problem of selecting a test battery was non-existent. The Youth Fitness Test published by the American Association for Health, Physical Education, and Recreation in 1958, and authored by the senior investigator of this study, was selected as the test battery to be used for the comparison. One exception was made; namely, a flexed arm hang was substituted for the modified pull-up in the girls' test battery.

The following tests along with the directions for their administration were included:

Pull-up - Boys

Equipment. A metal or wooden bar approximately 1½ inches in diameter is preferred. A doorway gym bar can be used and, if no regular equipment is available, a piece of pipe or even the rungs of a ladder can serve the purpose.

Description. The bar should be high enough so that the pupil can hang with his arms and legs fully extended and his feet free of the floor. Use the overhand grasp (palms away from face). After assuming the hanging position, the pupil raises his body by his arms until his chin can be placed over the bar and then lowers his body to a full hang as in the starting position. The exercise is repeated as many times as possible.

Rules. 1. Allow one trial unless it is obvious that the pupil had not had a fair chance.

2. The body must not swing during the execution of the movement. The pull must in no way be a snap movement. If the pupil starts swinging, check this by holding your extended arm across the front of the thighs.

3. The knees must not be raised and kicking of the legs is not permitted.

Scoring. Record the number of completed pull-ups to the nearest whole number.

Flexed Arm Hang - Girls

Equipment. A horizontal bar approximately 1½ inches in diameter is preferred. A doorway gym bar can be used and if no regular equipment is available, a piece of pipe can also serve the purpose. A stop watch is needed.

Description. Adjust the height of the bar so it is approximately equal to the subject's standing height. Use an overhand grasp (palms away from face). With the assistance of two spotters, one in front and one in back of subject, the subject raises her body off the floor to a position where the chin is above the bar, the elbows are flexed and the chest is close to the bar. The subject holds this position against a time criterion as long as possible.

Rules. 1. The stop watch is started as soon as the subject takes the starting position.

2. The watch is stopped when: (a) subject's chin touches the bar, (b) subject's head tilts backwards to keep chin above the bar, (c) subject's chin falls below the level of the bar.

Scoring. Record in seconds to the nearest second the length of time the subject holds the starting position.

Sit-up - Boys and Girls

Equipment. Mat or floor.

Description. The pupil lies on his back, either on the floor or on a mat, with legs extended and feet about two feet apart. His hands are placed on the back of the neck with the fingers interlaced. Elbows are retracted. A partner holds the ankles down, the heels being in contact with the mat or floor at all times.

The pupil sits up, turning the trunk to the left and touching the right elbow to the left knee, returns to starting position, then sits up turning the trunk to the right and touching the left elbow to the right knee. The exercise is repeated, alternating sides.

Rules. 1. The fingers must remain in contact behind the neck throughout the exercise.

2. The knees must be on the floor during the sit-up but may be slightly bent when touching elbow to knee.

3. The back should be rounded and the head and elbows brought forward when sitting up as a "curl" up.

4. When returning to starting position, elbows must be flat on the mat before sitting up again.

Scoring. One point is given for each complete movement of touching elbow to knee. No score should be counted if the fingertips do not maintain contact behind the head, if knees are bent when the pupil lies on his back or when he begins to sit up, or if the pupil pushes up off the floor from an elbow. The maximum limit in terms of number of sit-ups shall be: 50 sit-ups for girls, 100 sit-ups for boys.

Shuttle Run - Boys and Girls

Equipment. Two blocks of wood, 2 in. x 2 in. x 4 in., and stop watch. Pupils should wear sneakers or run barefooted.

Description. Two parallel lines are marked on the floor 30 feet apart. The width of a regulation volleyball court serves as a suitable area. Place the blocks of wood behind one of the lines. The pupil starts from behind the other line. On the signal "Ready? Go!" the pupil runs to the blocks, picks one up, runs back to the starting line and places the block behind the line; he then runs back and picks up the second block which he carries back across the starting line. If the scorer has two stopwatches or one with a split-second timer, it is preferable to have two people running at the same time. To eliminate the necessity of returning the blocks after each race, start the races alternately, first from behind one line and then from behind the other.

Rules. Allow two trials with some rest between.

Scoring. Record the better of the two trials to the nearest tenth of a second.

Standing Broad Jump - Boys and Girls

Equipment. Mat, floor or outdoor jumping pit, and tape measure.

Description. Pupil stands with the feet several inches apart and the toes just behind the take-off line. Preparatory to jumping, the pupil swings the arms backward and bends the knees. The jump is accomplished by simultaneously extending the knees and swinging forward the arms.

Rules. 1. Allow three trials.

2. Measure from the take-off line to the heel or other part of the body that touches the floor nearest to the take-off line.

3. When the test is given indoors, it is convenient to tape the tape measure to the floor at right angles to the take-off line and have the pupils jump along the tape. The scorer stands to the side and observes the mark to the nearest inch.

Scoring. Record the best of the three trials in feet and inches to the nearest inch.

50-Yard Dash - Boys and Girls

Equipment. Two stopwatches or one with a split-second timer.

Description. It is preferable to administer this test to two pupils at a time. Have both take positions behind the starting line. The starter will use the commands "Are you ready?" and "Go!" The latter will be accompanied by a downward sweep of the starter's arm to give the timer a visual signal.

Rules. The score is the amount of time between the starter's signal and the instant the pupil crosses the finish line.

Scoring. Record in seconds to the nearest tenth of a second.

Softball Throw for Distance - Boys and Girls

Equipment. Softball (12-inch), small metal or wooden stakes and tape measure.

Description. A football field marked in conventional fashion (five-yard intervals), makes an ideal area for this test. If this is not available, it is suggested that lines be drawn parallel to the restraining line, five yards apart. The pupil throws the ball while remaining within two parallel lines, six feet apart. Mark the point of landing with one of the small stakes. If his second or third throw is farther, move the stake accordingly so that, after three throws, the stake is at the point of the pupil's best throw. It was found expedient to have the pupil jog out to his stake and stand there; and then, after five pupils have completed their throws, the measurements were taken. By having the pupil at his particular stake, there is little danger of recording the wrong score.

Rules. 1. Only an overhand throw may be used.

2. Three throws are allowed.

3. The distance recorded is the distance from the point of landing to the nearest point on the restraining line.

Scoring. Record the best of the three trials to the nearest foot.

600-Yard Run-Walk - Boys and Girls

Equipment. Track or area marked off for 600 yards and a stop watch.

Description. Pupil uses a standing start. At the signal "Ready? Go!" the subject starts running the 600-yard distance. The running may be interspersed with walking if the subject tires. It is possible to have a dozen subjects run at one time by having the pupils pair off before the start of the event. Then each pupil listens for and remembers his partner's time as the latter crosses the finish. The timer merely calls out the times as the pupils cross the finish.

Rules. Walking is permitted, but the object is to cover the distance in the shortest possible time.

Scoring. Record in minutes and seconds.

SELECTION OF SAMPLE

As in the case of the 1957-58 survey, the University of Michigan Survey Research Center assumed responsibility for drawing the sample of pupils to be tested. The specific instructions were that the sample was to be representative of United States boys and girls, grades 5 through 12, in the public schools. For economic reasons the sample size was restricted to approximately 8,000 pupils, composed of 1,000 per grade, 500 boys and 500 girls.

The sample design was a typical multi-staged probability sample following the steps routinely employed by the Survey Research Center in the selection of national samples of public opinion, voting behavior and economic studies. The overall procedure involved establishing representative counties in the United States as primary sampling units (PSU's), then sub-sampling school districts, schools, and classrooms from within these counties by a controlled selection procedure. The following steps indicate the nature by which this was developed:

1. The Survey Research Center utilizes 62 primary sampling units which are representative of the United States outside of the Standard Metropolitan Statistical areas. These usually consist of a single county. Each of these PSU's represents a single selection from 62 strata, originally formed by stratifying counties in the United States by area, population, geographic and economic conditions. In addition, the 12 major metropolitan areas are included, thus forming a total of 74 primary sampling areas. In this investigation the 62 strata were divided in an A and B half of 31 each and one of these was used along with the 12 major metropolitan areas. Basically, 31 counties plus the 12 major metropolitan areas were set up as the framework for drawing the pupils to be tested.

2. The State Departments of Education for all PSU's included were contacted and asked to submit a list of all school districts with total enrollment figures for grades K-12 within the PSU's. These districts were sub-sampled with probability proportionate to size. In other words, specific school districts within the primary sampling units were drawn

for the next selection stage.

3. The superintendents of the school districts selected were then contacted, either personally by a field representative of the Survey Research Center, or by mail, and asked to supply information regarding the names of the schools, the range of grades and the school population size in their districts. These data were then adjusted for the 5 through 12 grade range. Approximately three schools per school district were drawn for further consideration.

4. The principals of the schools selected were mailed a work sheet requesting a list of home rooms, with the approximate enrollments for each room. The home room was used as a basis for selecting testees in order to give every pupil an equal chance of being drawn into the sample. In the few instances where there were no home rooms in a school a particular period which was used to take roll was taken as basis for drawing testees. The average number of home rooms per grade was taken as the interval for selecting particular home rooms after the initial home room was drawn from the list. For instance, if a school had five home rooms per grade a random number from one to five was selected and then every fifth home room on the list was designated for testing. This

avoided duplication of grades in individual schools, which would have increased the cluster effect. Once the home rooms were identified every effort was made to test all youngsters in that home room unless they had a medical excuse for not taking part.

It was originally estimated that the probability of selection of any student in the population defined would be in the order of 1/2500. This represented the products of the probabilities at each selection stage and appears in equation form as: $P_{psu} \times P_{district} \times P_{school} \times P_{class} = 1/2500$ In actual count the continental United States sample reached 9627 boys and girls from 110 schools. The increased number resulted from a response rate in excess of that anticipated and enrollment figures slightly above those originally reported.

THE ALASKAN SUB-SAMPLE

The alaska sample was independently drawn from the coterminous United States. It was selected as a sub-sample from which percentile rank norms for each of the seven variables could be compared with the continental United States. Basically this sample is defined as a two-stage, stratified probability sample with clusters of unequal sizes. The construction of the sampling frame and the general selection procedures were similar to those used in the coterminous United States sample. Specifically, these procedures involved four general steps; these will now be described in more detail:

1. All Alaskan public schools (excluding Bureau of Indian Affairs schools, which were not included in the population defined) were categorized into three strata, District Schools, Rural Schools, and On-Base (Air Force, Army) Schools. The Alaskan State Department of Education provided a list of all schools in each of these classifications, with range of grades, and total school population estimates included. The population estimates were then corrected by dividing by number of grades to produce an estimate of the number of students per grade in grades five through twelve, inclusive. This figure was then divided by thirty (an estimate of the mean number of students per class) to obtain an estimate of the average number of classes per grade per school.

2. Within each of the three strata, all school districts were listed in geographic order, from south to north. Under each district, all schools were listed, with their average

classes per grade, under appropriate columns, dependent on the grades contained, e.g., K-6, K-8, K-9, 10-12, K-12, etc.

3. Schools were selected from each of the three strata; District Schools, Rural Schools and On-Base (Air Force, Army) Schools, by applying a controlled selection with probability proportionate to size to the cumulated average classes per grade, resulting in the selection of twenty-one schools.

4. After clearing the customary school channels to make certain that the lines of communication were in order, the principal of each school was contacted by mail and asked to furnish a list of home rooms in each grade (see Appendix D). The inverse of the average classes per grade was then applied to the home room list, resulting in the selection of classrooms; example: a school with three average classes per grade (grades 7-9) would have one-third of its classes selected, yielding one class from each grade, when a systematic selection was employed. All students in each classroom selected were included in the test. Each student thus had an equal probability, in this case, 1/18, of being selected. Thus the criterion of equal probability of selection held for the Alaska sub-sample just as it did for the pupils in the coterminous United States.

The overall sampling equation can be described as:

$$P_{school} \times P_{class} = 1/18$$

The completed sample yielded an N of 1602 students, 813 girls and 789 boys. Two schools did not respond, resulting in a response rate of ninety per cent.

ADMINISTRATION OF TESTS

It should be noted that prior to contacting any school for specific information regarding enrollment a letter was sent to the superintendent and other key personnel requesting their cooperation. Every effort was made to observe the chain of command and keep the proper personnel informed. In some of the major metropolitan areas copies of the research proposal had to be submitted to research committees for approval. Once approval was secured at the higher echelons of administration the problem of test administration boiled down to obtaining cooperation of the teachers involved.

The general pattern for planning the test administration was to contact either the principal of the school, or, in the major metropolitan areas, the supervisor of physical education. Either of these would then designate the personnel responsible for administering the tests. A meeting was arranged with these people and other interested administrative personnel. In most instances these were held at a particular school in the district but area meetings were also held in Columbus, Ohio; Chicago; Memphis and New York City. These were held in a hotel and personnel from the neighboring areas were invited in for an orientation meeting.

The orientation meetings were organized to serve the following purposes:

1. Give some background on physical fitness testing in the United States and present the design of the present project.

2. Distribute Test Manuals, demonstrate and discuss the administration of the Youth Fitness Test.

3. Identify the schools and pupils to be tested.

4. Distribute Test Data Cards along with return addressed Jiffy Bags for mailing to Ann Arbor. Instruct personnel as to how the data were to be recorded.

5. Discuss problems regarding equipment, facilities, staff and the scheduling of tests and offer suggestions for coping with any unique situations.

6. Whenever possible visit the actual schools involved and view the physical setting where the testing would take place. This also provided an opportunity for meeting the

principal to gain his support plus the chance of making an estimate regarding the need for additional personnel to assist in the test administration.

7. Establish a deadline for returning the test data to Ann Arbor.

Chapter III

Statistical Analyses

The investigation dealt with the administration of seven physical fitness tests to over 19,000 subjects covering two national surveys. Because of the volume of data available a good share of the tabular information will be contained in the Appendices rather than in the body of the report.

One of the prime objectives of the study was to up-date the percentile scores for the AAHPER Youth Fitness Test. Tables 1 through 14 in Appendix A give the percentile scores for each age level for boys and girls. The 100th percentile represents the top performance on a particular test for the age level indicated. From age, height and weight data taken on each pupil his classification index was determined according to the Neilsen-Cozens Classification Indices in Tables 15 and 16, Appendix A. Percentile scores based on the Classification Index appear in Tables 17 through 37 in Appendix A.

The mean scores for each test and each age level plus the standard deviation and the number of testees for the girls appear in Table 1 and the same information for the boys appears in Table 2.

TABLE 1
YOUTH FITNESS TEST DATA 1964-65
GIRLS
Means and Standard Deviations
(Simple Random Sample Estimates)

Test		Age 10	11	12	13	14	15	16	17
Flexed Arm (sec.)	$\overline{X}$	11.2	11.3	9.6	9.8	9.7	10.4	11.1	10.3
	S.D.	11.7	12.9	10.1	12.7	10.6	11.6	13.1	10.8
	No.	471	656	622	566	548	510	597	519
Sit-ups (no.)	$\overline{X}$	33.0	32.4	32.5	32.3	30.4	28.4	28.1	28.7
	S.D.	17.5	14.9	15.2	14.7	13.4	13.6	13.5	13.6
	No.	516	677	657	593	564	524	620	527
Shuttle (sec.)	$\overline{X}$	11.8	11.8	11.7	11.6	11.5	11.5	11.5	11.4
	S.D.	1.2	1.3	1.2	1.3	1.3	1.2	1.2	1.2
	No.	424	623	625	571	546	517	601	521
St. Broad (in.)	$\overline{X}$	55.6	58.7	59.9	60.3	62.2	63.5	64.0	64.7
	S.D.	8.2	9.1	9.6	9.3	9.3	9.3	9.5	9.3
	No.	516	680	652	595	562	527	613	528
50-Yard (sec.)	$\overline{X}$	8.5	8.4	8.3	8.3	8.3	8.3	8.4	8.4
	S.D.	.9	1.0	.9	1.0	1.1	1.1	1.2	1.0
	No.	487	649	641	591	547	507	593	513
Softball (ft.)	$\overline{X}$	52.2	61.1	66.8	71.9	77.0	81.2	79.0	78.5
	S.D.	18.9	20.3	21.7	22.5	21.6	33.0	24.3	24.5
	No.	534	682	655	598	565	525	613	527
600-Yard (sec.)	$\overline{X}$	169.0	175.0	174.8	177.8	174.8	170.2	171.4	177.8
	S.D.	31.3	33.2	33.0	37.6	37.9	32.5	31.9	35.3
	No.	511	657	652	593	552	519	598	520
Number in Age Group		535	689	663	604	567	534	625	533

TABLE 2
YOUTH FITNESS TEST DATA 1964-65
BOYS
Means and Standard Deviations

(Simple Random Sample Estimates)

		Age							
Test		10	11	12	13	14	15	16	17
Pull-ups (no.)	$\overline{X}$	2.9	2.7	2.9	3.9	5.2	6.2	7.4	8.1
	S.D.	2.9	2.8	2.9	3.6	3.7	4.0	4.3	4.5
	No.	503	686	620	595	548	567	632	674
Sit-ups (no.)	$\overline{X}$	48.4	50.6	56.5	64.6	70.2	72.6	72.5	69.2
	S.D.	29.1	29.9	30.4	29.9	29.5	28.1	27.2	28.5
	No.	504	686	623	590	545	564	629	674
Shuttle (sec.)	$\overline{X}$	11.3	11.2	11.1	10.7	10.4	10.1	10.0	9.9
	S.D.	1.0	1.0	1.1	1.1	.9	.9	1.0	.9
	No.	450	636	596	563	530	553	619	664
St. Broad (in.)	$\overline{X}$	60.3	61.7	65.3	70.0	75.7	80.8	84.4	86.5
	S.D.	7.9	9.2	8.9	10.2	10.5	10.1	10.4	10.7
	No.	503	684	625	595	547	567	632	677
50-Yard (sec.)	$\overline{X}$	8.3	8.1	7.8	7.5	7.2	6.9	6.7	6.7
	S.D.	.9	.8	.9	.7	.7	.7	.5	.6
	No.	479	668	613	574	530	548	610	654
Softball (ft.)	$\overline{X}$	97.3	110.3	122.7	141.2	154.5	171.8	180.8	187.1
	S.D.	23.5	25.5	26.6	32.1	33.4	30.1	33.2	39.7
	No.	506	687	627	586	538	566	630	669
600-Yard (sec.)	$\overline{X}$	155.8	152.3	148.0	135.2	125.7	120.3	115.3	115.3
	S.D.	27.1	30.3	31.6	28.7	25.4	27.8	22.1	23.6
	No.	504	674	614	578	534	556	613	673
Number in Age Group		510	696	634	601	553	570	634	681

The differences in the mean scores for the 1965 data and the 1958 test results are graphically portrayed in Figures 1 through 7. A cursory examination of the illustrations reveals that the average score in practically all instances is higher for the 1965 test results than the 1958 data. The graphs do illustrate a parallel nature of the curves for both sets of data and for each of the tests. The slopes for the girls' sit-ups and 600-yard run demonstrate the lack of improvement between ages 10 and 17.

While a comparison of the mean scores for the two sets of data does give a rough indication of a trend it was deemed necessary to examine each test item at each age level for statistical significance. A criterion of two times the standard error of the difference between the 1958 mean and the 1965 mean was accepted as statistical significance at the 5 per cent level. The difference between means is expressed as a positive number despite the fact that this would be negative in the case of running events where a better score is a lower figure. With one exception, the softball throw for girls, age 17, the mean value for the 1965 data represented a better performance than the 1958 mean.

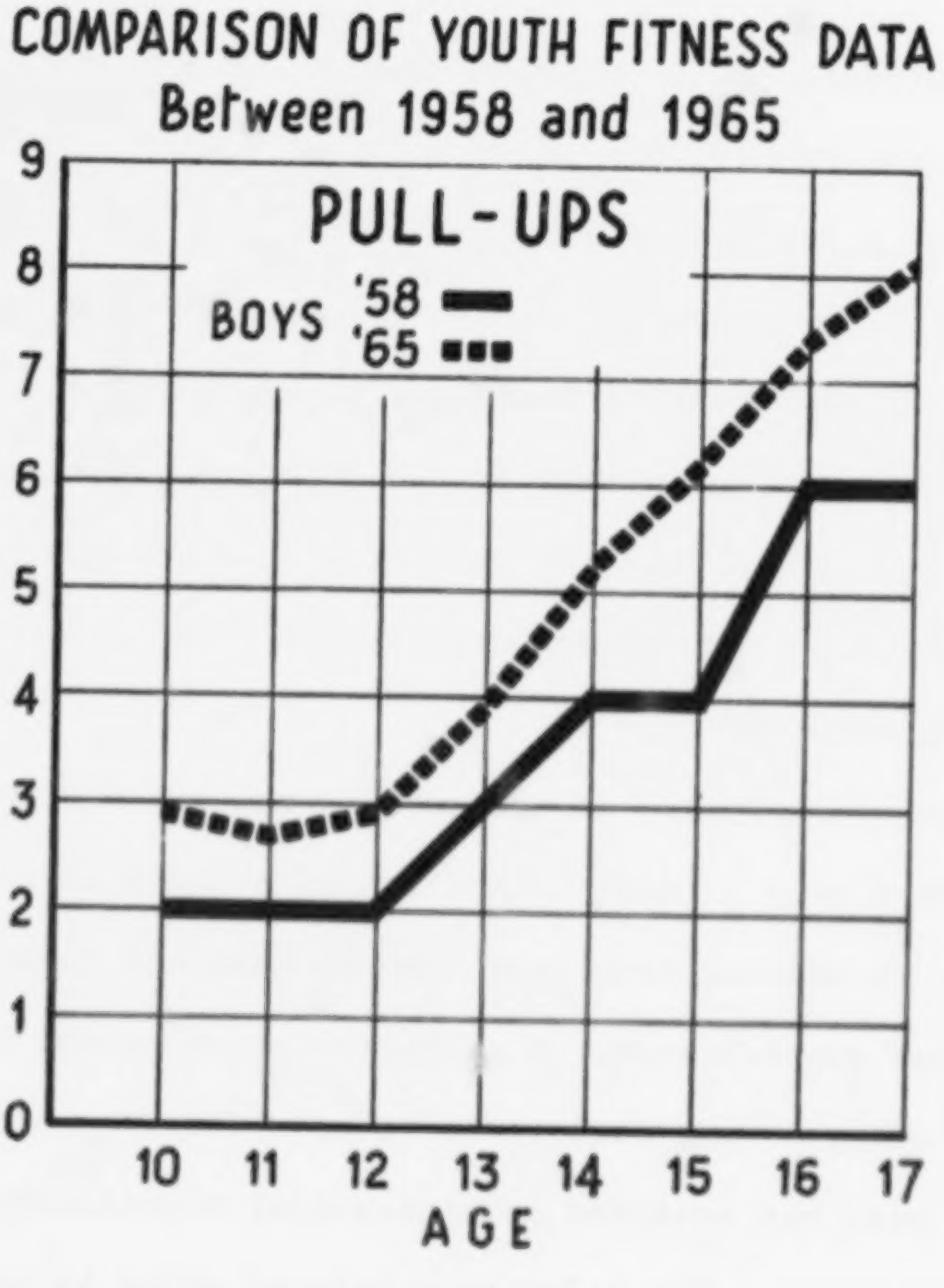

COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
PULL-UPS
BOYS
'58
'65
9
8
7
6
5
4
3
2
1
0
10
11
12
13
14
15
16
17
AGE

Figure 1

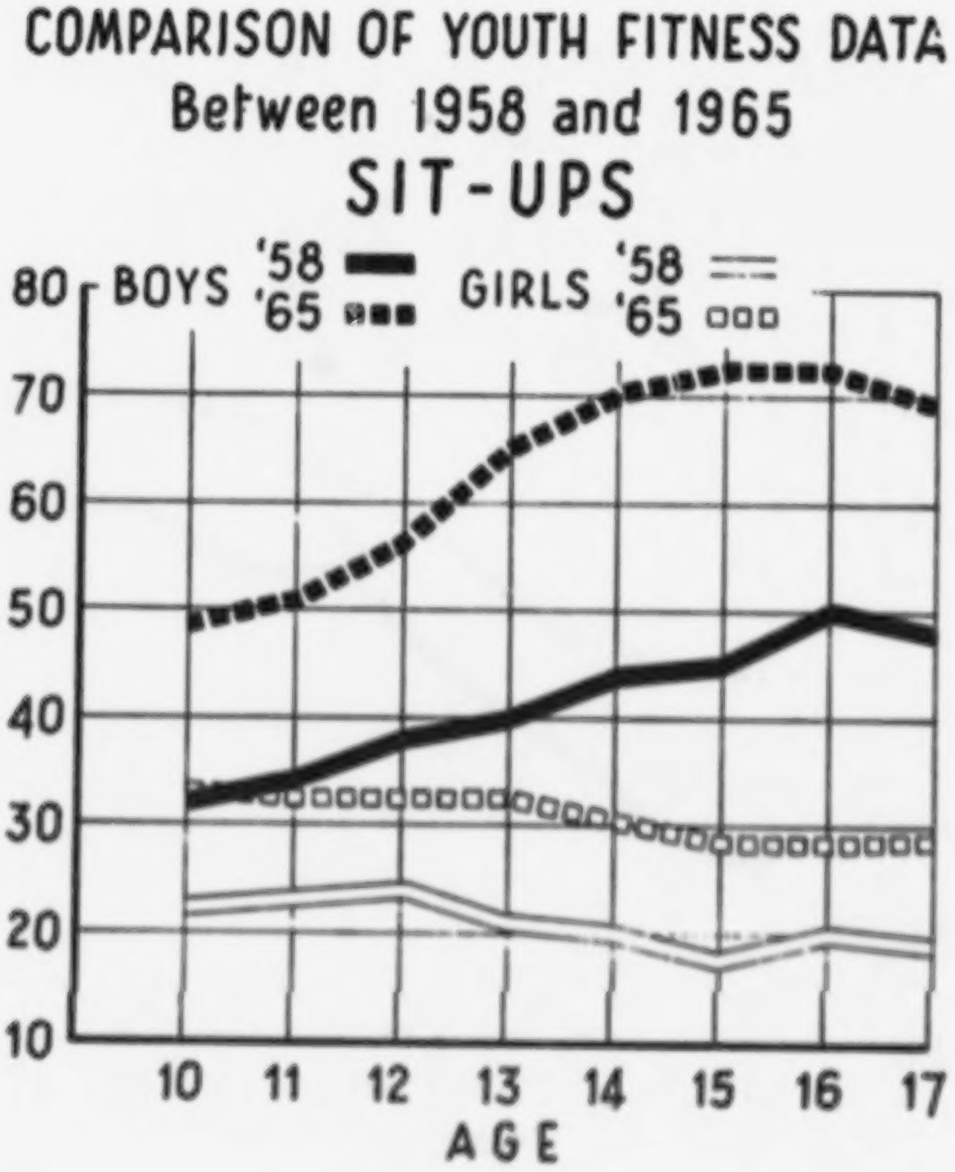

COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
SIT-UPS
BOYS '58
'65
GIRLS '58
'65
80
70
60
50
40
30
20
10
10
11
12
13
14
15
16
17
AGE

Figure 2

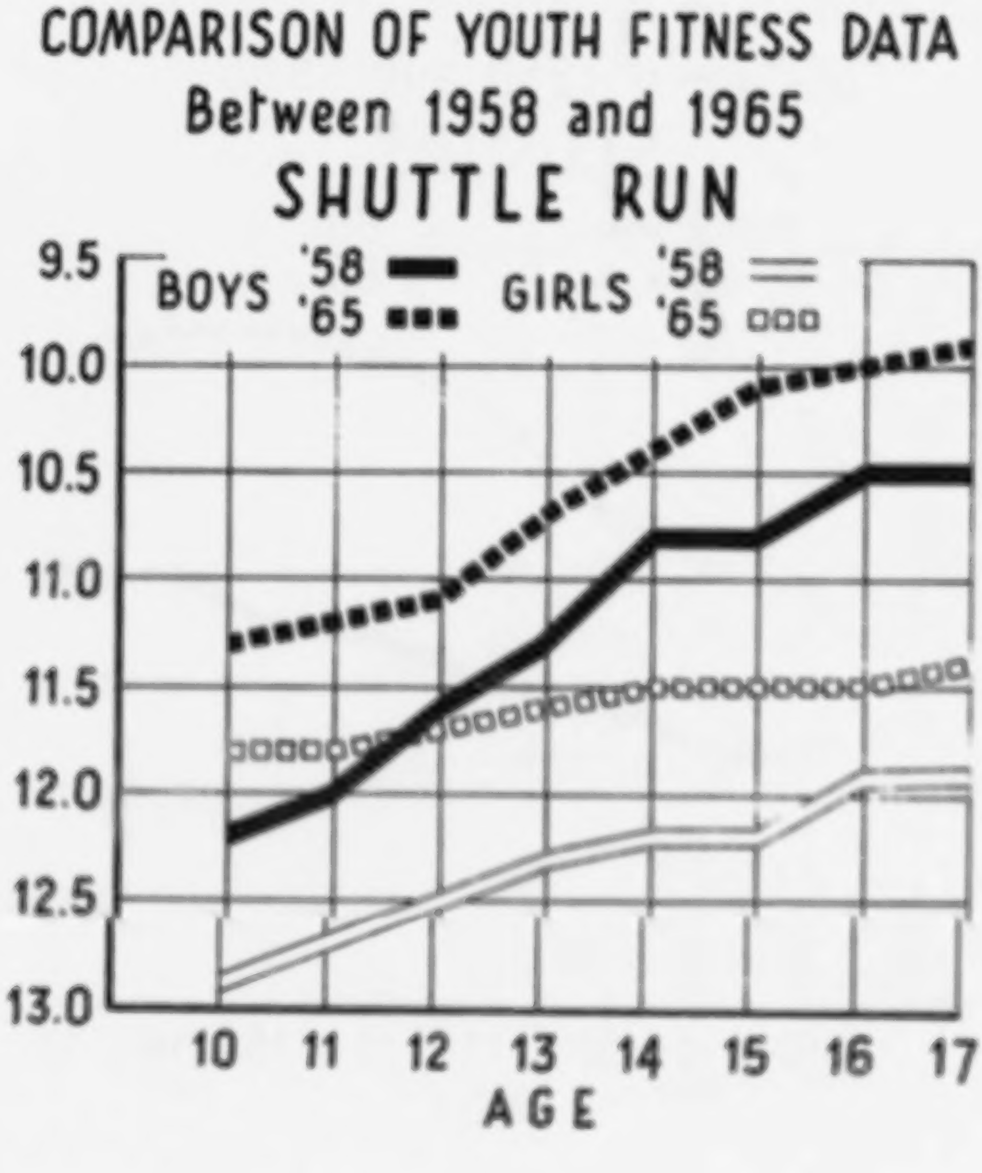

COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
SHUTTLE RUN
BOYS '58
'65
GIRLS '58
'65
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
10
11
12
13
14
15
16
17
AGE

Figure 3

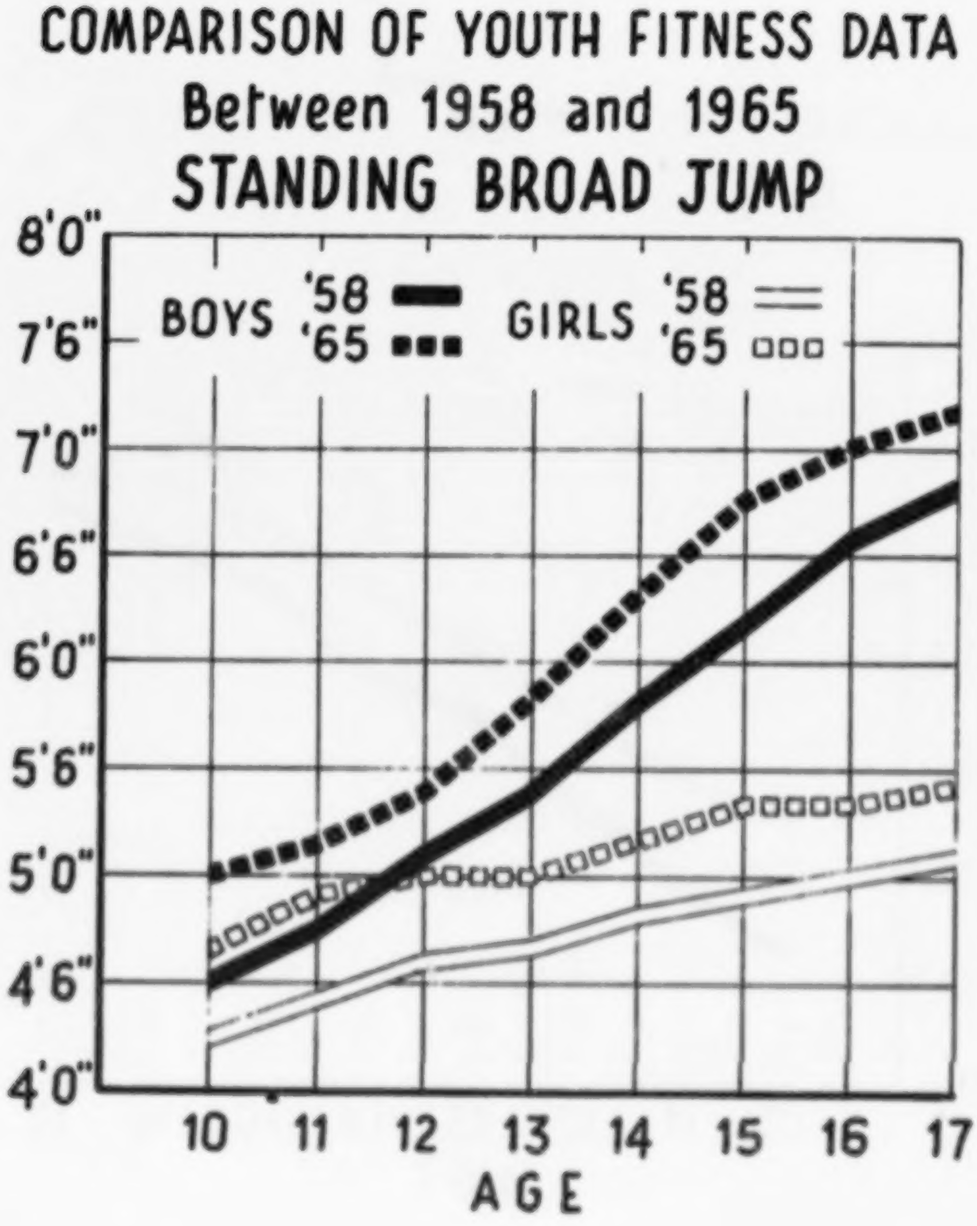
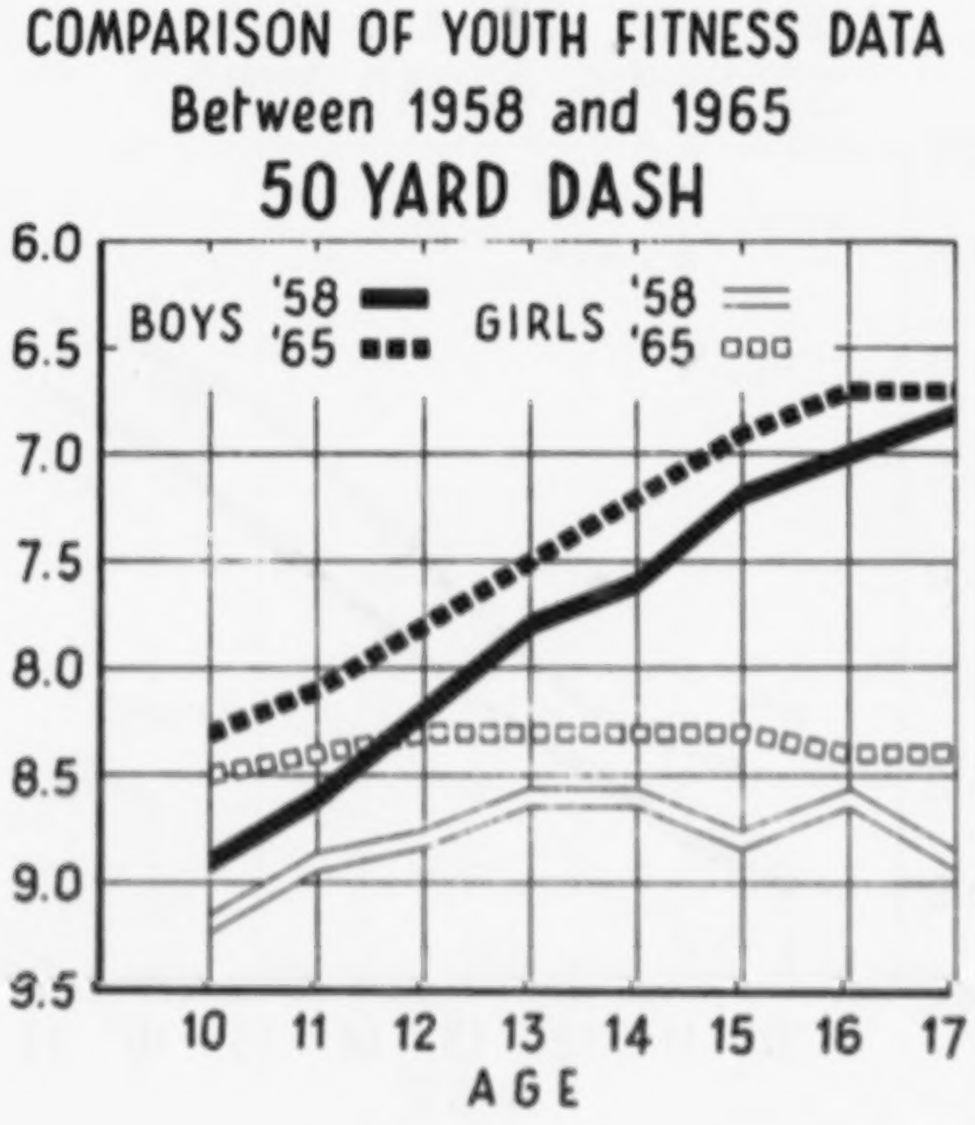
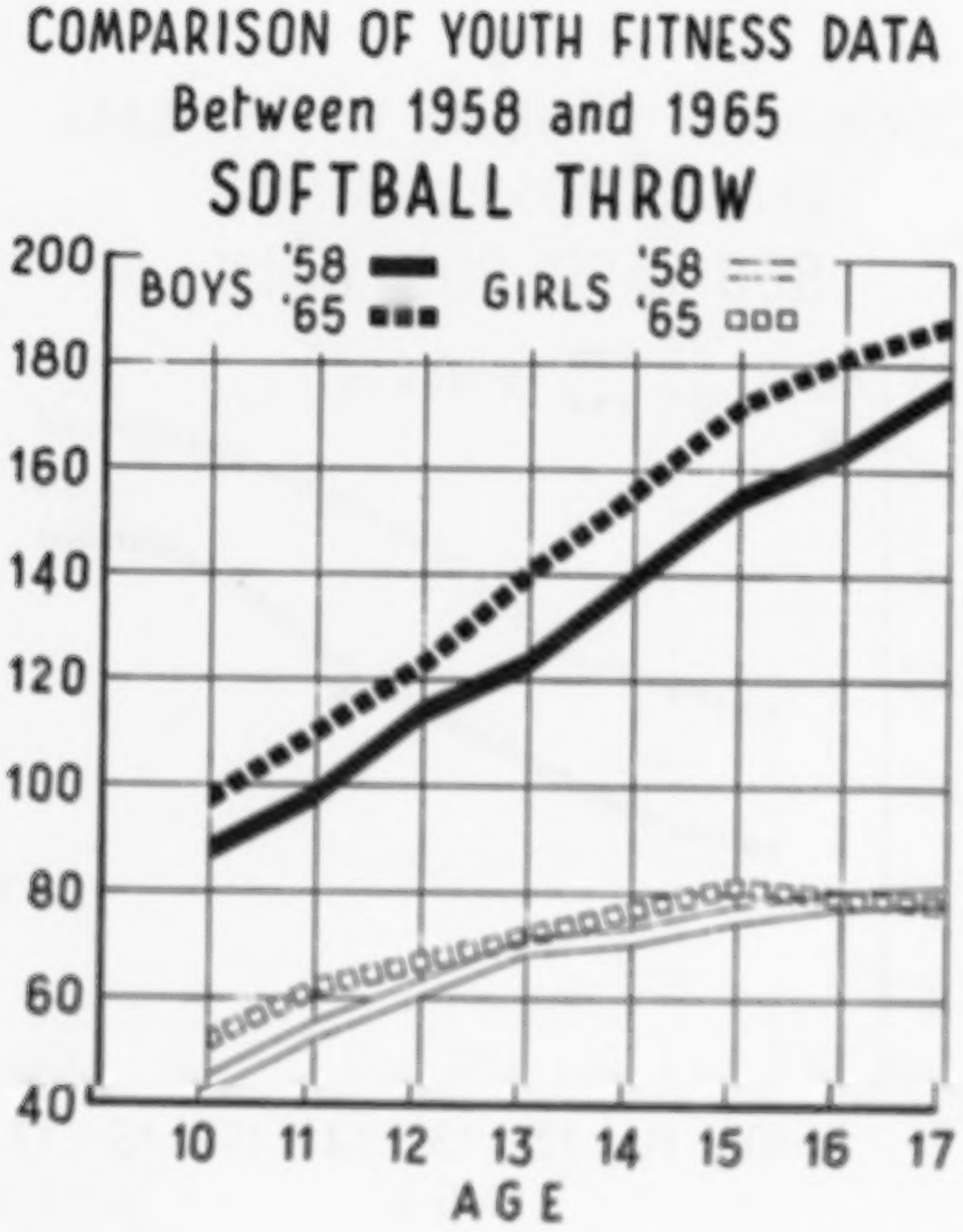

COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
STANDING BROAD JUMP
BOYS '58 '65
GIRLS '58 '65
8'0"
7'6"
7'0"
6'6"
6'0"
5'6"
5'0"
4'6"
4'0"
10
11
12
13
14
15
16
17
AGE

Figure 4



COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
50 YARD DASH

Figure 5



COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
SOFTBALL THROW

Figure 6

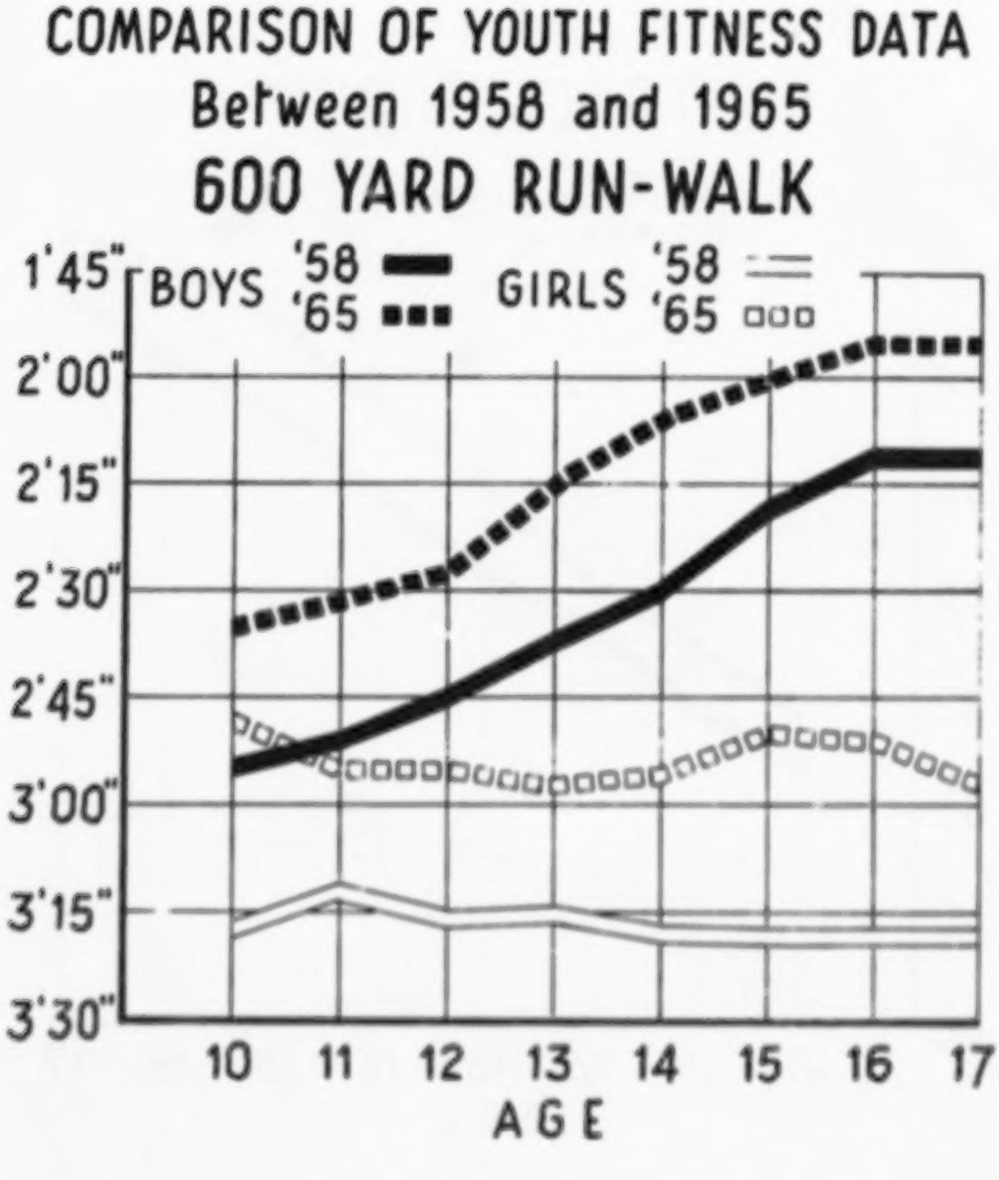

COMPARISON OF YOUTH FITNESS DATA
Between 1958 and 1965
600 YARD RUN-WALK
BOYS '58
'65
GIRLS '58
'65
1'45"
2'00"
2'15"
2'30"
2'45"
3'00"
3'15"
3'30"
10
11
12
13
14
15
16
17
AGE

Figure 7

Table 3 is a summarization of the comparison of means for the girls data and indicates the standard errors of the differences. Since most of the differences were significant it was decided to star only those that were not. One test for the girls, the flexed arm hang, was new and not included in the 1958 survey and consequently there was no basis for comparison on this particular test. The other six test items were the same. Using the 5 per cent level of significance as the criterion, out of a total of 48 comparisons 39 are significantly higher. While the mean scores for the 1965 data of the following were generally better than those of 1958 they were not significantly so in the following comparisons; 50-yard dash at age 11; softball throw at age 12; softball throw at age 13; softball throw at age 14; shuttle run, 50-yard dash and softball throw at age 16; and the shuttle run and softball throw at age 17. In one test, the softball throw, the average score for the girls in 1965 was significantly greater at only three age levels, 10, 11, and 15.

Table 4 gives the same basic information for the boys data. Once again if the 5 per cent level of significance is

TABLE 3. Comparison of Means for Girls Data 1958-1965 with Standard Errors of Differences

Test	X_1	$S.E._1$	N_1	X_2	$S.E._2$	N_2	X_1-X_2	S.E. X_1-X_2
SU-10	22.8	1.9	732	32.1	1.7	516	9.3	2.9
SR-10	12.9	.1	716	11.9	.1	424	1.0	.2
J-10	50.7	.5	629	55.6	.6	516	4.9	.8
50-10	9.2	.1	651	8.5	.1	487	.7	.2
T-10	44.2	.8	654	52.2	1.7	534	8.0	2.1
600-10	195.7	3.9	637	169.9	3.2	511	25.8	5.6
SU-11	25.1	1.6	811	32.3	1.3	677	7.2	2.6
SR-11	12.7	.1	783	11.8	.2	623	.9	.2
J-11	53.0	.7	677	58.7	.8	680	5.7	1.1
50-11	8.9	.1	736	8.4	.1	649	.5	1.5*
T-11	54.9	1.5	741	61.1	2.4	682	6.2	3.0
600-11	189.4	3.6	674	175.6	2.8	657	13.8	4.5
SU-12	23.3	1.0	547	32.4	1.2	657	9.1	1.6
SR-12	12.4	.2	521	11.7	.1	625	.7	.2
J-12	54.7	.5	472	59.9	.6	652	5.2	.8
50-12	8.7	.1	505	8.3	.1	641	.4	.1
T-12	65.2	2.5	507	66.8	2.1	655	1.6	3.4*
600-12	191.3	4.6	464	175.0	3.8	652	16.3	6.4

---

* Not significant at 5% level

TABLE 3
-continued-

Test	X_1	S.E.$_1$	N_1	X_2	S.E.$_2$	N_2	X_1-X_2	S.E. X_1-X_2
SU-13	22.6	1.2	532	32.2	1.4	593	9.6	1.7
SR-13	12.2	.1	518	11.6	.1	571	.6	.2
J-13	56.3	.7	490	60.3	.7	595	4.0	1.0
50-13	8.6	.1	473	8.3	.1	591	.3	.1
T-13	72.7	2.9	478	71.9	1.9	598	.8	3.4*
600-13	192.4	5.1	434	178.2	4.0	593	14.2	6.4
SU-14	20.7	.8	612	30.4	1.5	564	9.7	1.7
SR-14	12.1	.7	595	11.5	.1	546	.6	.1
J-14	57.6	.6	589	62.2	.7	562	4.6	.9
50-14	8.6	.1	540	8.3	.1	547	.3	.1
T-14	72.5	2.2	544	77.0	1.5	565	4.5	2.6*
600-14	196.8	4.7	526	175.3	4.8	552	21.5	5.2
SU-15	19.3	.7	454	28.3	1.3	524	9.0	1.5
SR-15	12.1	.1	436	11.5	.1	517	.6	.2
J-15	58.6	.7	421	63.5	.7	527	4.9	1.0
50-15	8.9	.2	419	8.3	.1	507	.6	.2
T-15	75.7	1.9	434	80.2	1.1	525	4.5	2.1
600-15	198.9	3.9	394	170.7	2.8	519	28.2	4.6

---

* Not significant at 5% level

TABLE 3
-continued-

Test	X_1	$S.E._1$	N_1	X_2	$S.E._2$	N_2	X_1-X_2	S.E. X_1-X_2
SU-16	20.5	1.1	378	28.1	1.4	620	7.6	1.9
SR-16	11.8	.1	365	11.5	.1	601	.3	.2*
J-16	60.0	.9	345	63.9	.9	613	3.9	1.3
50-16	8.6	.1	334	8.4	.1	593	.2	.2*
T-16	78.9	1.6	340	79.0	1.6	613	.1	2.4*
600-16	200.3	4.9	314	171.9	2.3	598	28.4	5.6
SU-17	19.8	1.6	336	28.7	1.7	527	8.9	2.6
SR-17	11.8	.2	330	11.4	.1	521	.4	.3*
J-17	60.4	.9	280	64.7	.9	528	4.3	1.3
50-17	9.0	.2	312	8.4	.1	513	.6	.2
T-17	80.0	2.6	317	78.5	2.1	527	1.5	3.6*
600-17	198.4	4.4	299	178.0	3.0	520	20.4	5.7

---

* Not significant at 5% level

TABLE 4. Comparison of Means for Boys Data 1958-1965 with Standard Errors of Differences

Test	X_1	S.E.$_1$	N_1	X_2	S.E.$_2$	N_2	X_1-X_2	S.E. X_1-X_2
PU-10	1.5	.1	614	2.9	.2	503	1.4	.2
SU-10	33.1	1.5	664	48.3	2.7	504	15.2	3.4
SR-10	12.2	.1	652	11.3	.1	450	.9	.2
J-10	53.7	.4	588	60.3	.5	503	6.6	.6
50-10	8.9	.1	618	8.3	.1	479	.6	.1
T-10	87.9	1.3	615	97.3	1.7	506	9.4	2.4
600-10	174.1	3.0	616	155.8	2.6	504	18.3	4.1
PU-11	1.7	.1	784	2.7	.2	686	1.0	.2
SU-11	35.3	2.0	822	50.6	3.2	686	15.3	3.8
SR-11	11.9	.1	816	11.2	.1	636	.7	.1
J-11	57.0	.5	670	61.8	.5	684	4.8	.7
50-11	8.5	.1	784	8.1	.1	668	.4	.1
T-11	99.0	1.3	760	110.4	1.8	687	11.4	2.2
600-11	164.5	4.0	721	152.3	2.4	674	12.2	4.6
PU-12	2.3	.2	570	2.9	.2	620	.6	.3
SU-12	38.9	1.3	582	56.5	2.6	623	17.6	3.2
SR-12	11.6	.1	562	11.1	.1	596	.5	.1
J-12	61.0	.5	569	65.3	.5	625	4.3	.7
50-12	8.1	.1	547	7.9	.1	613	.2	.1
T-12	111.7	1.5	544	122.9	1.4	627	11.2	2.3
600-12	163.7	3.0	491	148.3	3.4	614	15.4	5.0

---

* Not significant at 5% level

TABLE 4
-continued-

Test	X_1	S.E.$_1$	N_1	X_2	S.E.$_2$	N_2	X_1-X_2	S.E. X_1-X_2
PU-13	2.8	.2	493	3.9	.2	595	1.1	.2
SU-13	39.7	2.0	518	64.6	2.5	590	24.9	3.4
SR-13	11.3	.1	482	10.8	.1	563	.5	.1
J-13	64.5	.6	537	70.0	.6	595	5.5	.8
50-13	7.9	.1	503	7.5	* *	574	.4	.1
T-13	122.9	2.5	502	141.2	1.7	586	18.3	2.8
600-13	156.8	4.0	447	135.5	2.7	578	21.3	5.3
PU-14	3.5	.2	628	5.2	.3	548	1.7	.3
SU-14	44.7	1.5	635	69.9	2.4	545	25.2	2.7
SR-14	10.8	.1	611	10.4	.1	530	.4	.1
J-14	70.1	.7	615	75.7	.8	547	5.6	1.0
50-14	7.6	* *	572	7.2	.1	530	.4	.1
T-14	139.9	2.1	568	154.5	2.2	538	14.6	2.8
600-14	150.0	3.1	555	125.9	2.3	534	24.1	4.0
PU-15	4.4	.2	600	6.2	.3	567	1.8	.3
SU-15	46.6	2.1	601	72.6	3.0	564	26.0	3.5
SR-15	10.7	.1	578	10.1	.1	553	.6	.1
J-15	74.0	.7	561	80.8	.7	567	6.8	1.0
50-15	7.2	.1	563	6.9	.1	548	.3	.1
T-15	156.9	2.3	580	171.8	1.9	566	14.9	2.9
600-15	139.5	3.0	569	120.5	2.3	556	19.0	4.2

---

* * Less than .05

TABLE 4
-continued-

Test	X_1	$S.E._1$	N_1	X_2	$S.E._2$	N_2	X_1-X_2	S.E. X_1-X_2
PU-16	5.5	.2	444	7.4	.3	632	1.9	.3
SU-16	50.7	2.3	447	72.4	2.9	629	21.7	3.8
SR-16	10.4	.1	431	10.0	.1	619	.4	.1
J-16	79.0	.8	418	84.4	.7	632	5.4	1.1
50-16	7.0	.1	409	6.7	* *	610	.3	.1
T-16	165.2	3.2	407	180.7	2.0	630	15.5	4.2
600-16	132.2	2.6	402	115.9	1.8	613	16.3	3.4
PU-17	6.3	.3	429	8.1	.3	674	1.8	.4
SU-17	48.3	2.6	431	69.1	3.6	674	20.8	4.8
SR-17	10.4	.2	426	10.0	.1	664	.4	.2
J-17	82.5	.9	393	86.5	.9	677	4.0	1.3
50-17	6.8	.1	402	6.7	.1	654	.1	.1*
T-17	177.0	3.0	404	187.1	4.8	669	10.1	5.7*
600-17	132.5	3.4	402	115.7	2.4	663	16.8	4.4

---

* Not significant at 5% level

* * Less than .05

applied as a criterion only two mean score differences did not attain this level, the 50-yard dash and the softball throw for age 17. Out of a total of 56 comparisons, 54 were significant at the 5 per cent level for the boys data.

Because there is generally a positive relationship between the physical fitness tests and age it was necessary to examine the interrelationships at each age level. In essence this is identical to holding age constant. Tables 5 through 12 present the intercorrelations for the 7 tests in the physical fitness test battery for boys and girls. Of a total of 336 intercorrelations 9 are in the .00 to .10 range, 36 between .11 to .20, 104 in the .21 to .30 range, 105 from .31 to .40, 63 in the .41 to .50 range, and 10 between .51 and .60. The highest relationships appeared to be between the standing broad jump and the shuttle run and the standing broad jump and the 50-yard dash. The intercorrelations for the boys data were slightly above those for the girls. An analysis of the boys data reveals slightly higher intercorrelations at the upper age level. This is not so prounounced in the data on the girls' scores.

TABLE 5

Intercorrelations for 10 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.32	.33	.42	.39	.23	.30
Sit-ups		.31	.28	.22	.27	.26
Shuttle Run			.40	.48	.34	.28
St.Br. Jump				.47	.42	.37
50-yd. Dash					.31	.32
Softball Throw						.29

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.30	.20	.31	.25	.19	.23
Sit-ups		.20	.28	.31	.28	.06
Shuttle Run			.36	.44	.14	.15
St.Br. Jump				.39	.37	.15
50-yd. Dash					.39	.32
Softball Throw						.21

TABLE 6

Intercorrelations for 11 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.27	.22	.32	.38	.18	.26
Sit-ups		.22	.30	.21	.19	.30
Shuttle Run			.38	.37	.33	.28
St.Br. Jump				.40	.34	.35
50-yd. Dash					.43	.33
Softball Throw						.25

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.33	.37	.40	.35	.04	.19
Sit-ups		.33	.27	.29	.07	.22
Shuttle Run			.47	.41	.06	.15
St.Br. Jump				.49	.20	.23
50-yd. Dash					.20	.28
Softball Throw						.08

TABLE 7

Intercorrelations for 12 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.38	.27	.41	.43	.28	.10
Sit-ups		.22	.31	.30	.29	.22
Suuttle Run			.52	.40	.35	.29
St.Br. Jump				.51	.40	.20
50-yd. Dash					.42	.18
Softball Throw						.21

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.41	.43	.43	.32	.08	.26
Sit-ups		.47	.38	.35	.19	.33
Shuttle Run			.54	.52	.16	.32
St.Br. Jump				.52	.37	.37
50-yd. Dash					.26	.32
Softball Throw						.11

TABLE 8

Intercorrelations for 13 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.27	.32	.46	.42	.34	.20
Sit-ups		.30	.30	.28	.24	.25
Shuttle Run			.53	.50	.34	.33
St.Br. Jump				.59	.46	.32
50-yd. Dash					.47	.39
Softball Throw						.28

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.36	.38	.36	.25	.12	.19
Sit-ups		.40	.42	.23	.18	.27
Shuttle Run			.54	.44	.13	.29
St.Br. Jump				.42	.29	.29
50-yd. Dash					.18	.28
Softball Throw						.23

TABLE 9

Intercorrelations for 14 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.25	.36	.49	.46	.34	.37
Sit-ups		.22	.22	.24	.18	.27
Shuttle Run			.50	.42	.40	.42
St.Br. Jump				.53	.44	.36
50-yd. Dash					.52	.50
Softball Throw						.34

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.33	.35	.35	.26	.21	.09
Sit-ups		.38	.40	.23	.17	.08
Shuttle Run			.52	.38	.28	.17
St.Br. Jump				.40	.34	.23
50-yd. Dash					.27	.24
Softball Throw						.21

TABLE 10

Intercorrelations for 15 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.33	.38	.45	.42	.24	.27
Sit-ups		.26	.32	.20	.26	.36
Shuttle Run			.49	.42	.30	.30
St.Br. Jump				.57	.50	.39
50-yd. Dash					.47	.43
Softball Throw						.26

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.30	.30	.39	.28	.17	.25
Sit-ups		.35	.34	.23	.14	.15
Shuttle Run			.50	.37	.27	.24
St.Br. Jump				.45	.32	.20
50-yd. Dash					.18	.29
Softball Throw						.20

TABLE 11

Intercorrelations for 16 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.38	.32	.49	.47	.29	.32
Sit-ups		.29	.38	.20	.28	.42
Shuttle Run			.46	.41	.39	.36
St.Br. Jump				.52	.45	.42
50-yd. Dash					.42	.43
Softball Throw						.34

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.35	.25	.38	.24	.23	.28
Sit-ups		.42	.42	.29	.22	.27
Shuttle Run			.52	.41	.22	.34
St.Br. Jump				.51	.39	.39
50-yd. Dash					.27	.47
Softball Throw						.25

2

TABLE 12

Intercorrelations for 17 Year Olds

BOYS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Pull-ups	.27	.30	.40	.34	.21	.20
Sit-ups		.35	.33	.36	.33	.42
Shuttle Run			.56	.42	.41	.46
St.Br. Jump				.55	.47	.43
50-yd. Dash					.49	.46
Softball Throw						.38

GIRLS

Variable	Sit Ups	Shuttle Run	St.Br. Jump	50-yd. Dash	Softball Throw	600-yd. Run
Fl.Arm Hang	.25	.25	.35	.22	.15	.20
Sit-ups		.36	.39	.36	.31	.32
Shuttle Run			.52	.50	.30	.35
St.Br. Jump				.52	.45	.35
50-yd. Dash					.37	.44
Softball Throw						.23

At the time of the 1957-58 survey Alaska had not obtained statehood and consequently was not included in the sample. During the current investigation data were collected from pupils in the Alaskan schools and these were treated as a subsample. The percentile scores for the Alaska schools based on age appear in Tables 1 through 14, Appendix B. A similar breakdown of scores based on the Neilsen-Cozens Classification Index appear in Tables 15 through 35 in Appendix B.

The means and standard deviations for the Alaskan sub-sample appear in Tables 13 and 14. These data on Alaska represent an initial attempt to secure test results on a state-wide basis and should be viewed as a frame of reference for future study rather than for comparison with the coterminous United States.

A word of caution regarding the Alaska sample is in order. In the planning stages it was hoped that a sample of pupils could be drawn which would include approximately one hundred boys and one hundred girls from each age level. An examination of Tables 13 and 14 reveals that this was not attained at the lower age levels. With the limited number of cases at ages 10 and 11 some question might be raised regarding the stability of the data. Suffice it to say that the planning was sound and the data do represent a fine initial effort.

TABLE 13
YOUTH FITNESS TEST DATA 1964-65
ALASKA SAMPLE - GIRLS
Means and Standard Deviations

(Simple Random Sample Estimates)

		Age							
Test		10	11	12	13	14	15	16	17
Bent Arm	$\overline{X}$	8.5	8.1	12.3	14.5	13.5	13.7	12.4	11.7
(sec.)	S.D.	12.2	11.4	13.6	12.5	12.0	12.0	12.7	9.1
	No.	41	92	115	75	94	126	117	143
Sit-ups	$\overline{X}$	35.3	35.1	37.9	34.6	33.3	33.2	33.8	29.7
(no.)	S.D.	13.6	16.6	14.6	15.2	13.8	13.8	13.3	13.7
	No.	41	91	115	78	96	126	116	142
Shuttle	$\overline{X}$	11.8	11.7	11.8	11.6	11.6	11.1	11.4	11.4
(sec.)	S.D.	1.1	.9	1.2	1.1	1.1	1.0	1.0	.9
	No.	31	67	104	74	96	126	116	141
St. Broad	$\overline{X}$	60.1	60.1	59.9	60.7	61.5	62.4	64.0	63.9
(in.)	S.D.	10.4	8.4	8.5	10.0	8.9	8.0	8.5	8.1
	No.	40	82	115	78	96	125	118	143
50-Yard	$\overline{X}$	9.3	8.9	8.7	8.5	8.2	8.3	8.2	8.3
(sec.)	S.D.	1.3	1.1	1.0	1.0	1.0	1.0	.8	.9
	No.	36	75	105	75	96	125	117	138
Softball	$\overline{X}$	52.1	56.8	63.4	69.3	72.5	77.4	76.5	72.3
(ft.)	S.D.	16.4	18.1	18.1	21.8	21.6	24.4	20.8	19.4
	No.	40	82	114	78	97	123	119	138
600-Yard	$\overline{X}$	179.1	172.8	176.2	185.0	170.2	167.4	165.7	167.8
(sec.)	S.D.	34.8	28.7	37.5	38.8	29.4	31.5	49.7	30.8
	No.	40	91	114	74	95	119	119	139
Number in Age Group		41	92	115	79	97	126	119	144

TABLE 14
YOUTH FITNESS TEST DATA 1964-65
ALASKA SAMPLE - BOYS
Means and Standard Deviations
(Simple Random Sample Estimates)

		Age							
Test		10	11	12	13	14	15	16	17
Pull-ups (no.)	$\overline{X}$	1.7	2.3	2.8	3.6	5.5	5.3	6.7	7.9
	S.D.	2.0	3.2	3.7	4.9	4.9	3.8	3.9	4.3
	No.	45	81	82	80	103	95	113	178
Sit-ups (no.)	$\overline{X}$	37.4	52.9	57.8	68.2	73.5	74.2	73.4	66.3
	S.D.	26.9	30.4	30.5	32.7	27.3	27.4	27.2	28.4
	No.	46	82	82	79	103	97	112	179
Shuttle (sec.)	$\overline{X}$	11.7	11.6	11.3	11.0	10.4	10.2	10.1	10.2
	S.D.	.9	1.0	1.0	1.0	1.0	.9	1.0	1.1
	No.	34	67	77	80	102	93	111	176
St. Broad (in.)	$\overline{X}$	59.8	62.3	63.1	67.5	75.2	77.1	82.5	84.6
	S.D.	10.1	9.0	8.4	9.9	9.8	11.1	9.0	10.8
	No.	42	69	80	80	103	98	115	182
50-Yard (sec.)	$\overline{X}$	9.3	8.6	8.5	8.2	7.6	7.3	6.9	6.8
	S.D.	1.3	.8	1.0	1.0	.8	.7	.6	.6
	No.	35	70	75	78	102	96	113	175
Softball (ft.)	$\overline{X}$	96.4	107.7	113.5	124.9	142.6	154.1	166.2	179.2
	S.D.	21.1	20.0	22.9	24.8	33.8	31.5	28.2	32.0
	No.	41	71	80	80	102	95	113	177
600-Yard (sec.)	$\overline{X}$	173.7	155.2	150.9	147.4	132.1	128.4	118.3	120.2
	S.D.	35.6	22.7	22.2	25.1	22.7	31.3	28.0	27.2
	No.	44	81	80	77	101	97	113	180
Number in Age Group		46	82	82	80	104	98	115	182

After the publication of the results of the 1958 Youth Fitness Survey numerous investigators were interested in making comparative studies. In some instances data were requested for a particular city or state with the intent of comparing these with another city or state. Since the director of the project had promised that no data from a single school system would be released and that analyses would be restricted to nation-wide implications it was impossible to meet these requests. However, this did not deter other research workers from using the national data and making comparisons with other national groups. One that received a fair amount of notoriety and was published in English made a comparison of United States school children with those of Great Britain. A simple comparison of mean scores at each age level was made without any further statistical elaboration. No tests of significance of difference were applied. With the exception of the softball throw, the United States youths did not show up very well. It might be appropriate to re-examine the comparison using the 1965 United States data in lieu of the 1958 results.

Once again the comparison is limited to one of mean scores since measures of variance were not included in the earlier

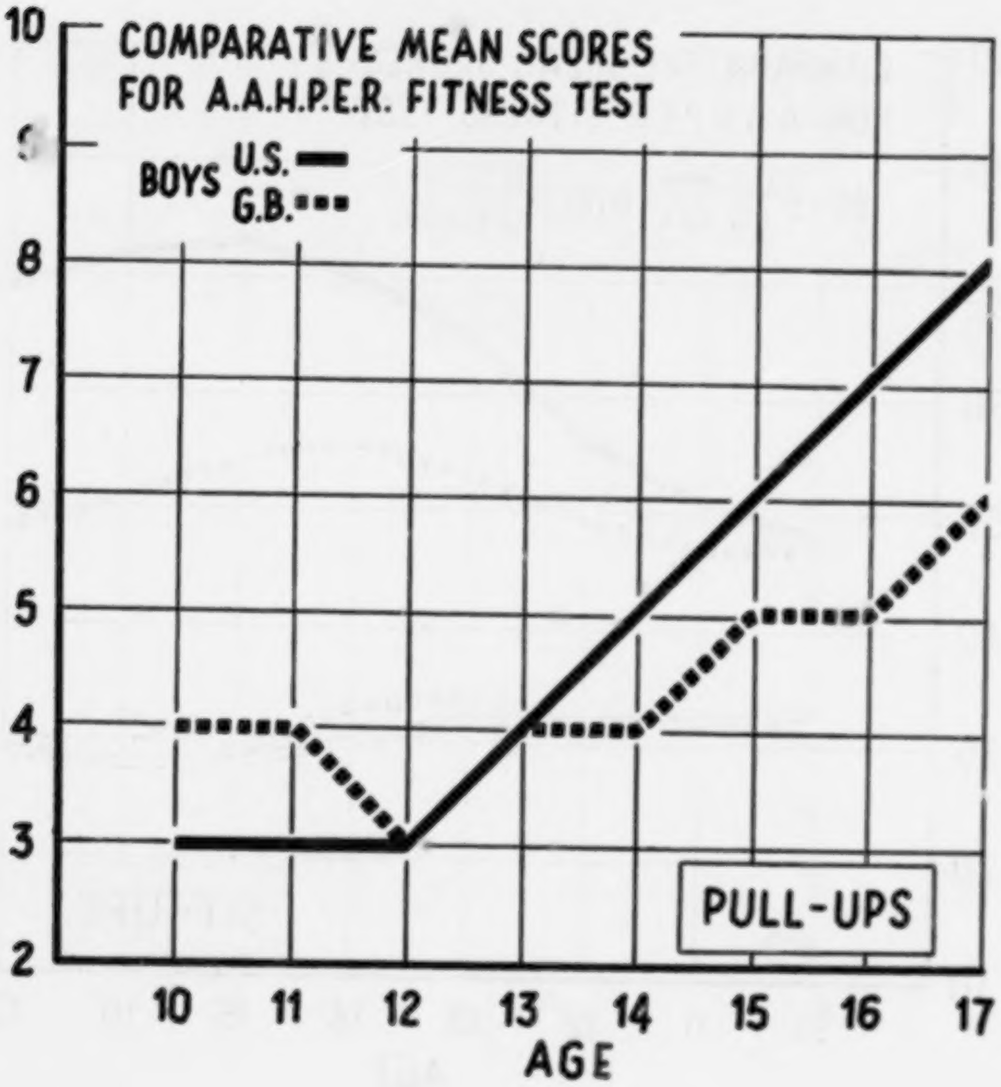

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S.
G.B.
PULL-UPS
10
9
8
7
6
5
4
3
2
10
11
12
13
14
15
16
17
AGE

Figure 8

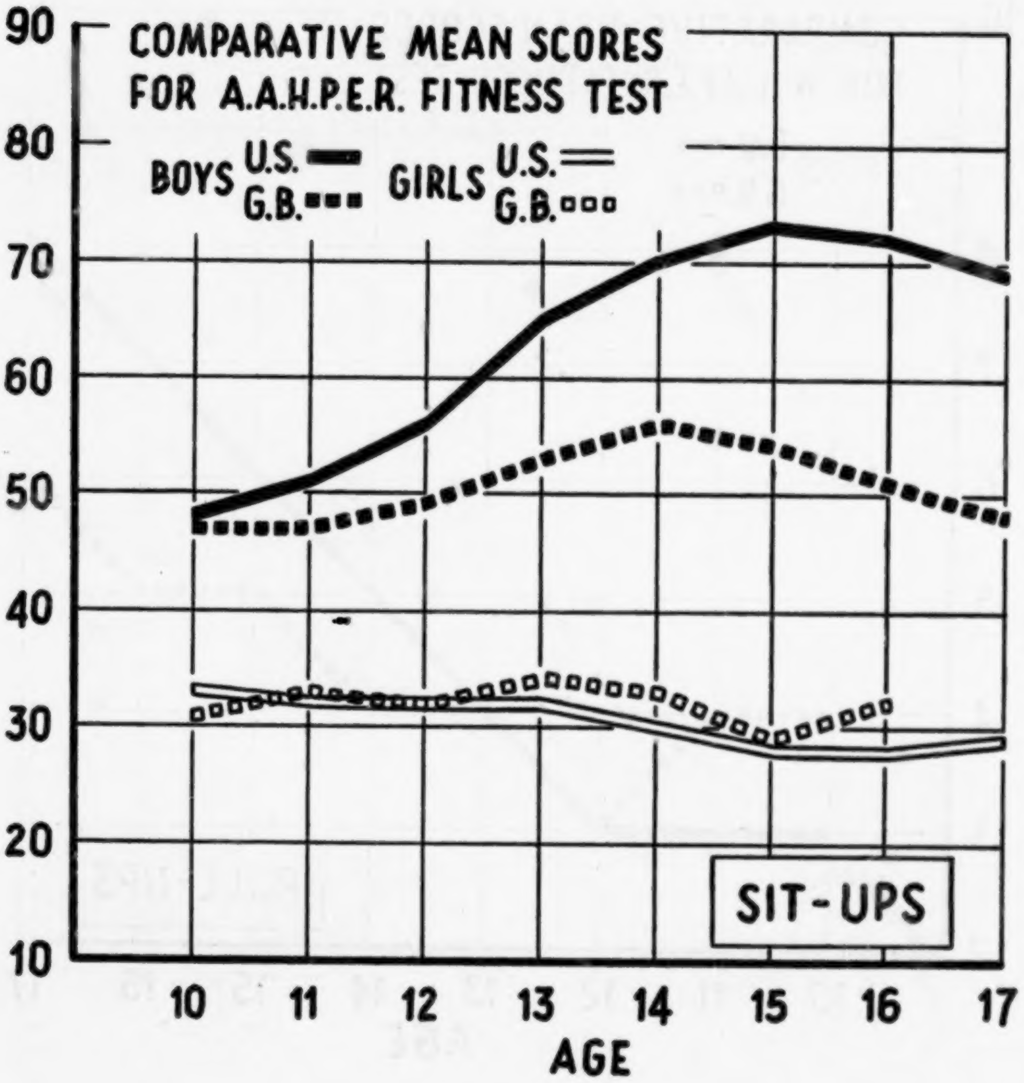

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S.
G.B.
GIRLS U.S.
G.B.
SIT-UPS
90
80
70
60
50
40
30
20
10
10
11
12
13
14
15
16
17
AGE

Figure 9

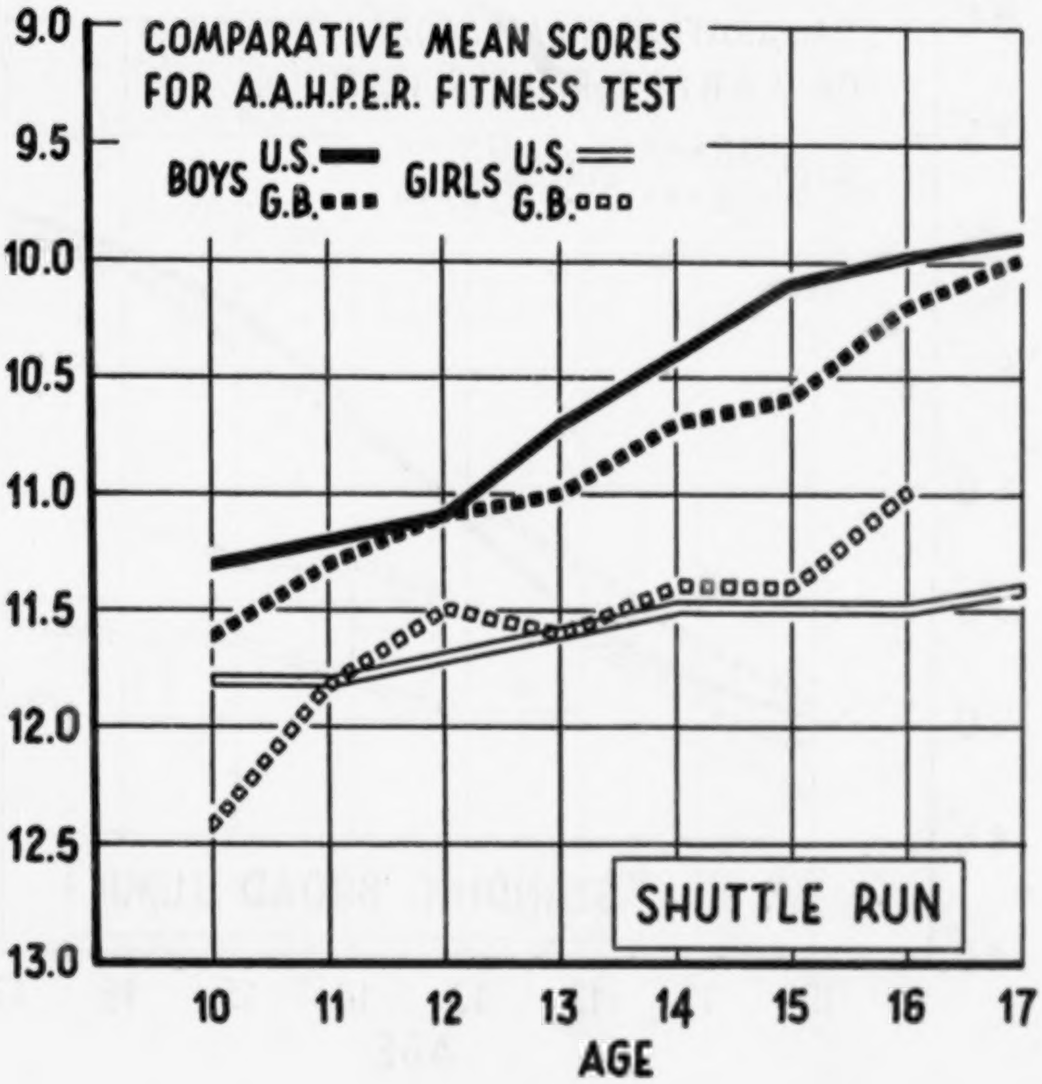

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S. G.B.
GIRLS U.S. G.B.
SHUTTLE RUN
9.0
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
10
11
12
13
14
15
16
17
AGE

Figure 10

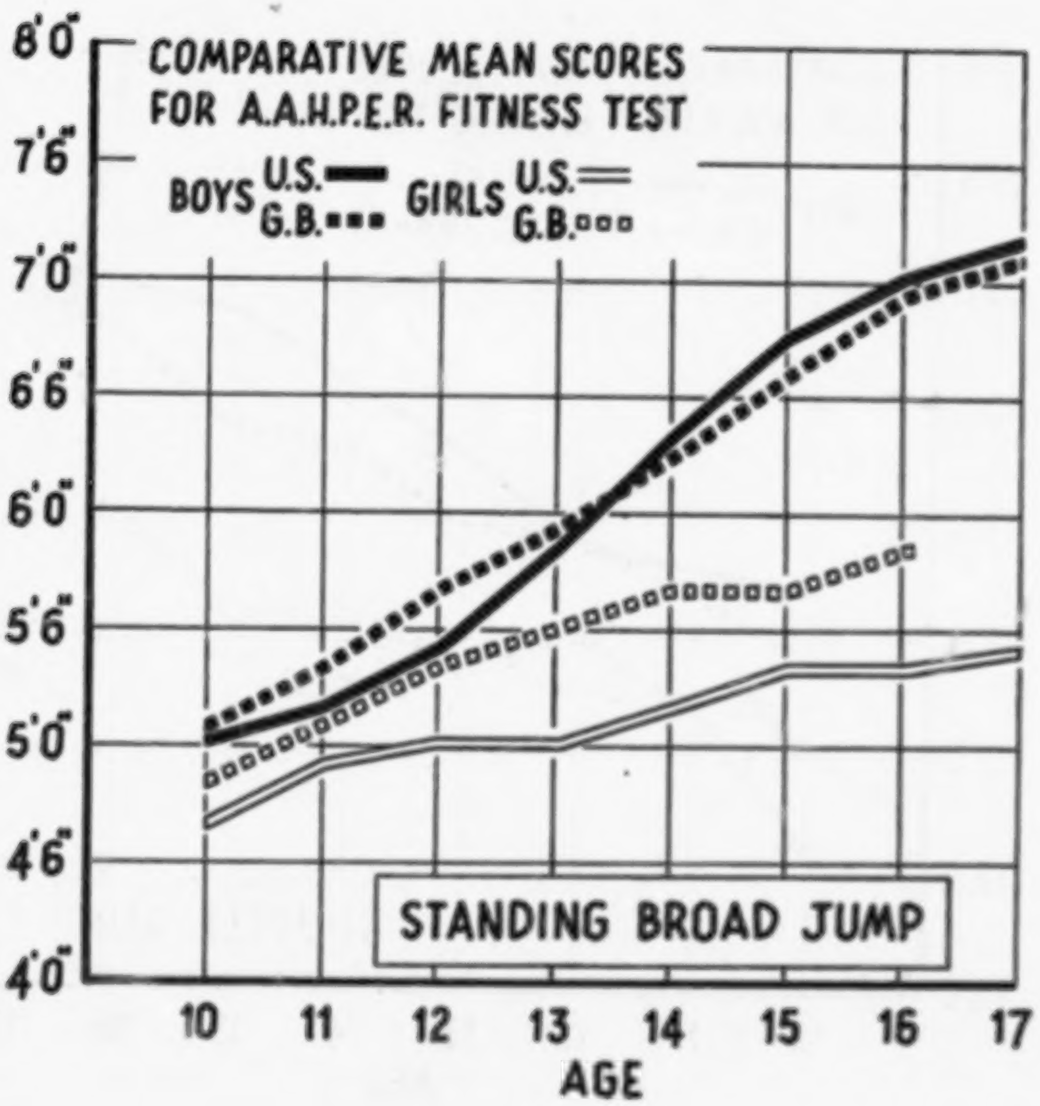

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S. G.B.
GIRLS U.S. G.B.
STANDING BROAD JUMP
8'0"
7'6"
7'0"
6'6"
6'0"
5'6"
5'0"
4'6"
4'0"
10
11
12
13
14
15
16
17
AGE

Figure 11

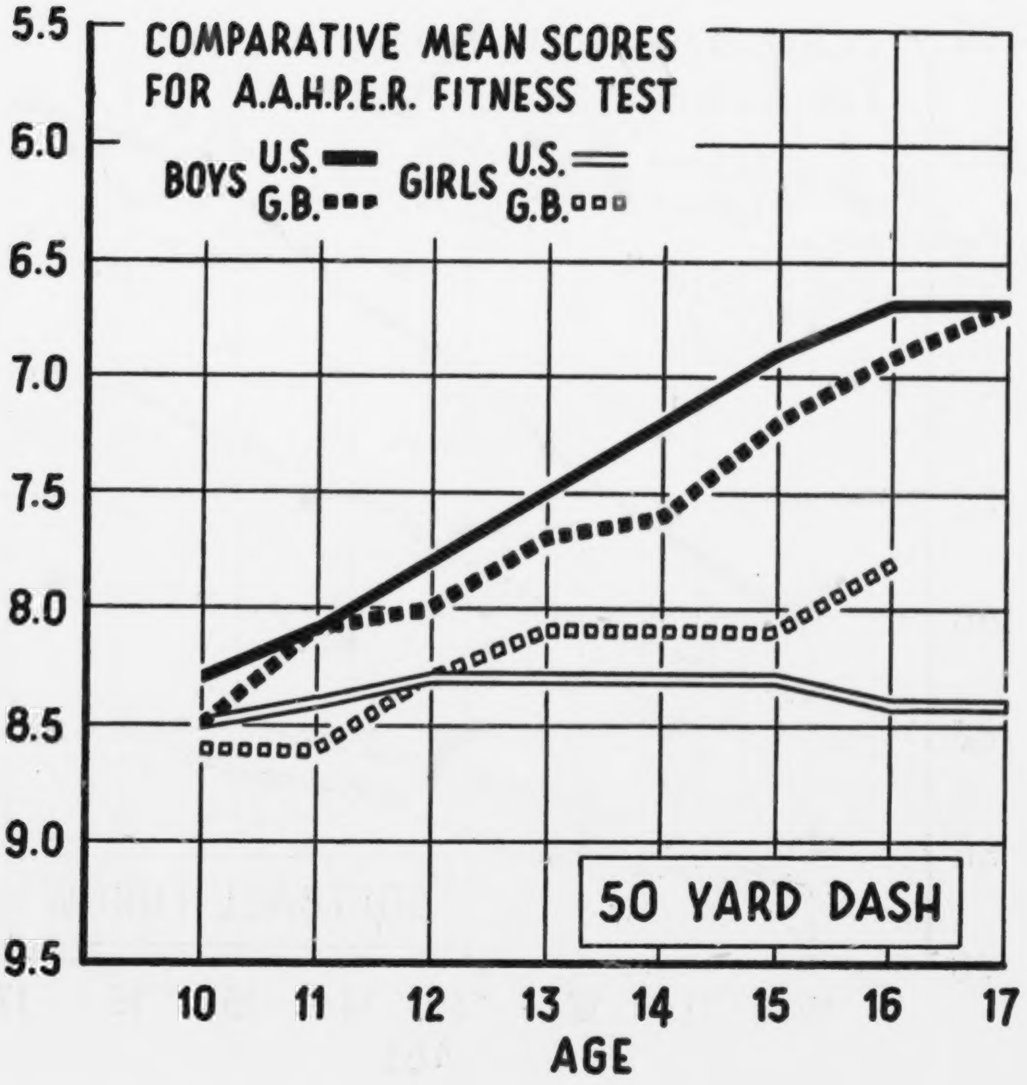

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S. G.B.
GIRLS U.S. G.B.
50 YARD DASH
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
10
11
12
13
14
15
16
17
AGE

Figure 12

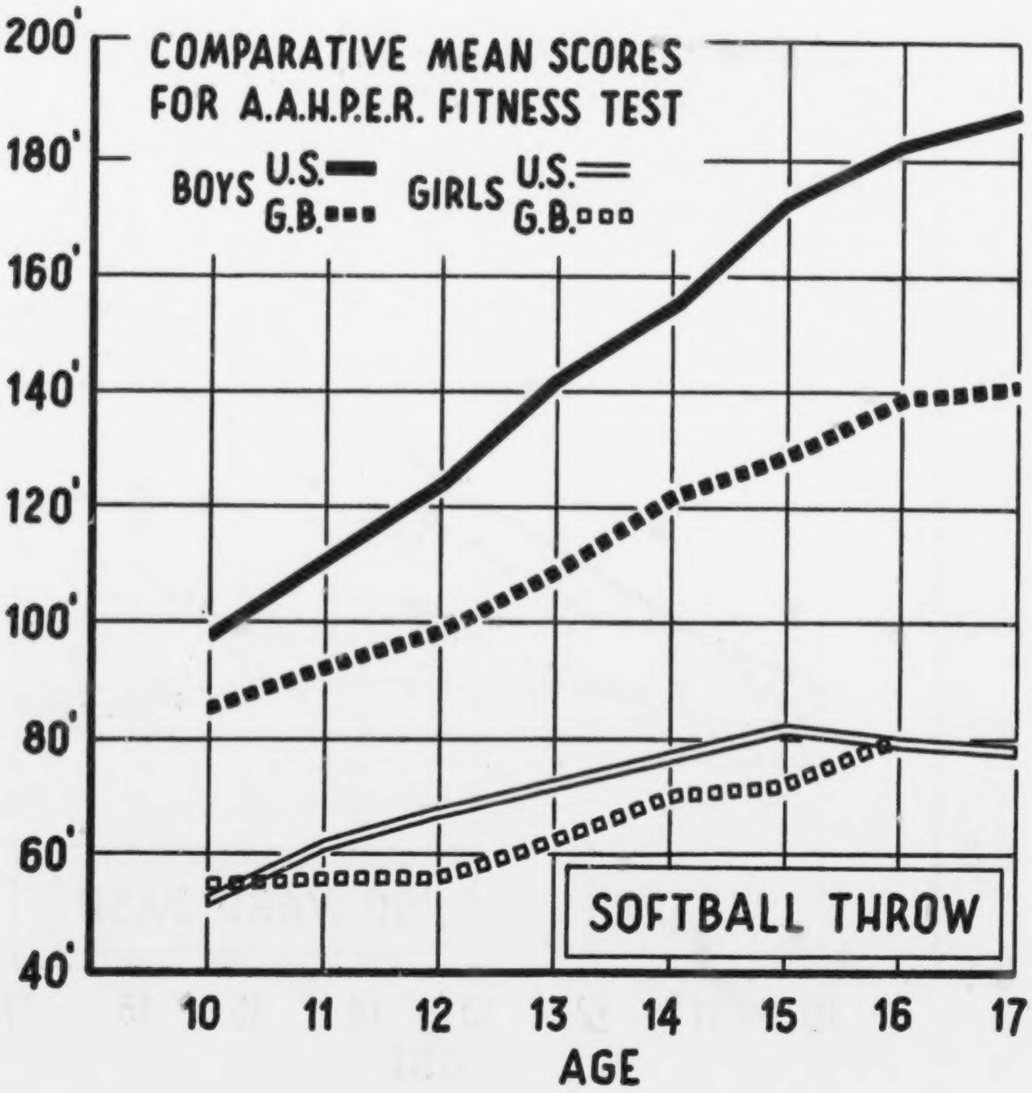

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S. G.B.
GIRLS U.S. G.B.
SOFTBALL THROW
200'
180'
160'
140'
120'
100'
80'
60'
40'
10
11
12
13
14
15
16
17
AGE

Figure 13

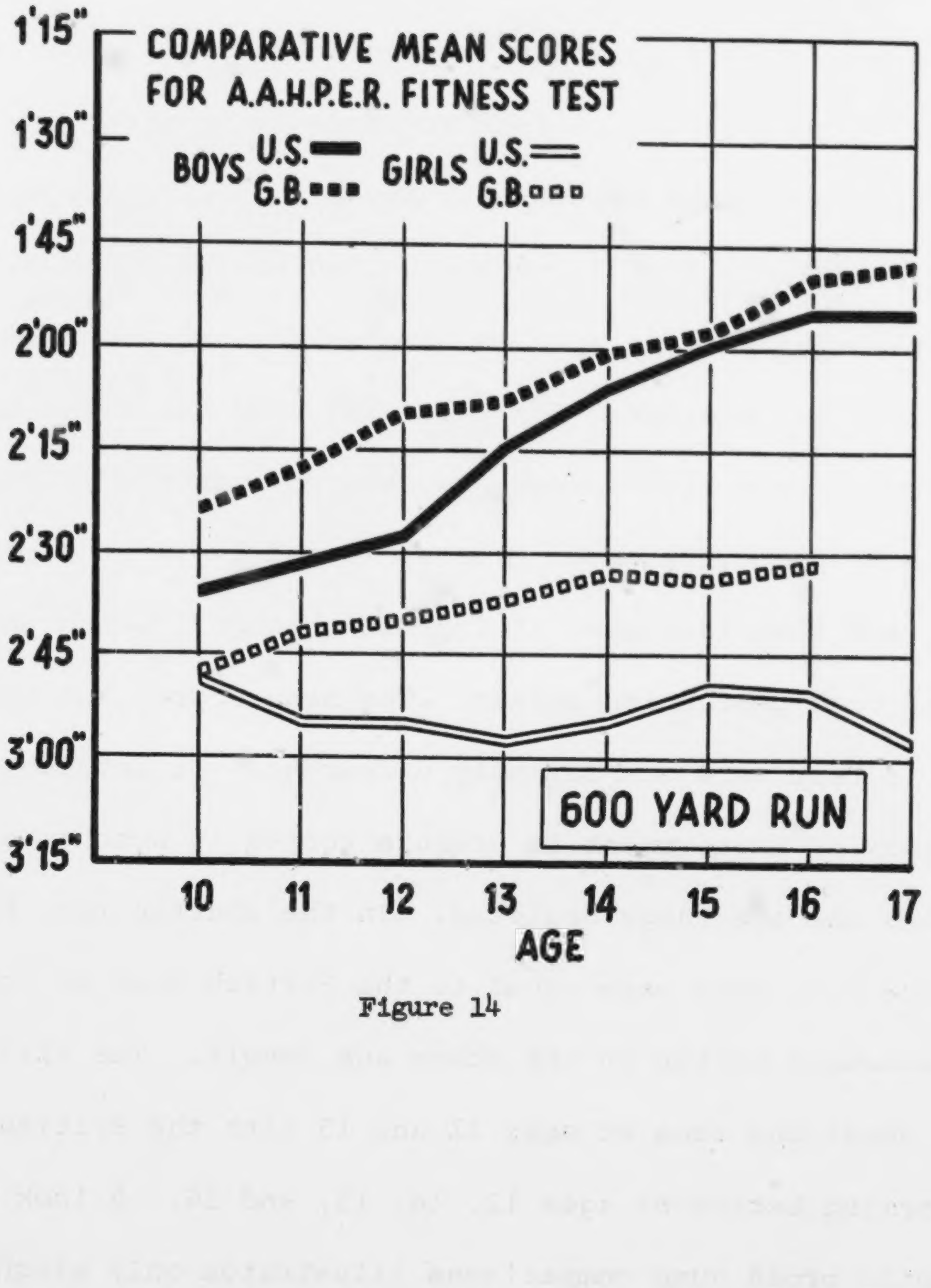

COMPARATIVE MEAN SCORES
FOR A.A.H.P.E.R. FITNESS TEST
BOYS U.S. G.B.
GIRLS U.S. G.B.
1'15"
1'30"
1'45"
2'00"
2'15"
2'30"
2'45"
3'00"
3'15"
10
11
12
13
14
15
16
17
AGE
600 YARD RUN

Figure 14

investigation. These would be a prerequisite for a more sophisticated statistical analysis. The graphic analyses of the two sets of data for the girls and boys appear in Figures 8 through 14. A look at these is in order.

Figure 8 shows the British boy with a slightly higher score at ages 10 and 11 and the United States youth with a better performance at ages 14 through 17. No comparison for the girls was available for this test item since the test battery for the 1965 survey was changed. In the sit-ups, Figure 9, the differences at ages 10 and 11 for the boys were small and then increased at ages 12 through 17 with the United States boys performing better. The mean scores for the girls on this test were not markedly different. Of interest is the lack of improvement in average scores in both groups through the age range depicted. In the shuttle run, Figure 10, the U.S. boys were equal to the British boys at age 12 and somewhat better at the other age levels. The girls scores were about the same at ages 11 and 13 with the British girls performing better at ages 12, 14, 15, and 16. A look at the standing broad jump comparisons illustrates only slight differences in the boys performances. The girls results in this test shows the British girls superior at each level of comparison. Figure 12 shows the U.S. boys slightly faster than the British at ages 10, 12, 13, 14, 15, and 16, and both averages the same at 11 and 17. The U.S. girls averaged a faster 50-yard dash at ages 10 and 11, but the British girls reached the U.S. average at 12 and then surpassed their performances at 13 through 16. The softball throw is something of an unfair comparison since the sport is traditionally an American game. The boys results point this up quite dramatically with the U.S. averages higher at all age levels. The contrast in the girls scores is not so drastic. Figure 14, illustrating the differences in the 600-yard run shows the British performances superior for both boys and girls at each age level. The differences in the boys times are small at the upper age levels. One observation to be noted is that the average score for the British girls improves at each age level, whereas, the U.S. girls show no improvement in run times from age 10 through 17.

Chapter IV

Summary, Conclusions and Discussion

SUMMARY

A brief overview of selected events which had an influence on physical fitness in the United States has been presented as part of the Introduction to this study. The fact that the climate was ripe for an extension of efforts toward greater physical fitness is emphasized.

The central problem of the investigation is concerned with making a comparative study of Youth Fitness today with that of pupils attending school during 1957-58. The Youth Fitness Test as developed by the Research Council of the American Association for Health, Physical Education and Recreation was selected as the instrument for comparison. This particular test is the only physical fitness test which was administered to a carefully selected nation-wide sample of boys and girls. As such, the test results represented the best available data in the field. Description of the tests and the results of the 1957-58 survey appear in the *Youth Fitness Test Manual* published by the American Association for Health, Physical Education and Recreation in 1958.

The current investigation followed the same basic research design of the 1957-58 study. One change was made in the test battery for girls; namely, the flexed arm hang was substituted for the modified pull-ups. The test for boys was kept intact.

A description of each of these tests appears in the study. A similar description was distributed to all personnel taking part in the investigation.

The responsibility of selecting a representative sample of boys and girls, grades 5-12, was delegated to the University of Michigan Survey Research Center with the following stipulations: 1) the sample was to be representative of United States boys and girls, grades 5-12, in the public schools and 2) the sample size was to be restricted to approximately 1000 pupils per grade, or 500 boys and 500 girls.

A typical multi-staged probability sample was drawn. Upon the completion of the drawing of the sample, the appropriate school superintendents were contacted and were informed of the nature of the project and asked to cooperate in the venture. As an aside, it should be mentioned that the response could not have been more cooperative and every school system selected in the coterminous United States ultimately took part in the study so the response rate was 100 per cent.

After the necessary lines of communication had been cleared and personnel designated for supervising the test administration, meetings were held with these individuals. A typical meeting consisted of some introductory remarks regarding the purposes of the investigation, an explanation and demonstration of the test battery and an opportunity to ask questions and discuss the problems of test administration. At the close of the meeting an individual confab was held with each school representative and the students to be tested in his particular school were identified. Additional information regarding the recording of the test data and the procedure for forwarding these to the University of Michigan were outlined.

It was decided to undertake a study of Alaskan as well as Hawaiian school children. The school authorities in Alaska were most cooperative but unfortunately it was not possible to secure support from the authorities in Hawaii. Because Alaska was not a state during the 1957-58 survey, the data from here have been handled as a sub-sample. Approximately the same procedure for orienting personnel was used in Alaska as in the other states.

The final count of pupils involved included 9627 boys and girls from 110 schools in the coterminous United States and 1602 pupils from 18 schools in Alaska.

The results of the survey were coded and punched into IBM cards and the following statistical analyses were made: 1) percentile scores based on age were developed for each test item for both boys and girls, 2) percentile scores based on the Neilsen-Cozens Classification Index were determined for each test and both sexes, 3) the intercorrelations for the seven tests for boys and girls at each age level were calculated, 4) the means and standard deviations of the test results from both sexes were calculated, 5) the significances of the differences between the means of the 1957-58 data and 1964-65 data were determined.

A graphic presentation of the comparison of youth fitness data from 1958 with the 1965 data and another set of figures depicting comparisons of mean test scores of children from Great Britain and the United States were presented.

The final section of the investigation dealt with the conclusions and discussions. The latter covers some conjectures concerning the conclusions plus selected side remarks which might interest another investigator doing a nation-wide survey.

CONCLUSIONS

The statistical analyses of the test results permit the following conclusions:

1) the mean test scores for the girls at each age level 10-17 were higher in 1965 than in 1958 with the exception of the softball throw for 16 and 17 year olds.

2) the mean test scores for girls for the 1965 data generally improved between ages 10 and 17 for the shuttle run, standing broad jump and softball throw. There was little or no improvement in the girls mean test scores ages 10-17 in the flexed arm hang, sit-ups and the 600-yard run. The same trend existed in these endurance tests in the 1958 data. There was also little or no improvement in the 50-yard dash.

3) the differences between the mean test scores of the 1958 and 1965 data for girls were statistically significant at the 5 per cent level in 39 comparisons and were not significantly different at this level in 9 cases. Significant differences were noted in: the sit-ups, ages 10, 11, 12, 13, 14, 15, 16 and 17; shuttle run, ages 10, 11, 12, 13, 14, and 15; standing broad jump, ages 10, 11, 12, 13, 14, 15, 16, and 17; 50-yard dash,

ages 10, 12, 13, 14, 15 and 17; softball throw, ages 10, 11, and 15; 600-yard run, ages 10, 11, 12, 13, 14, 15, 16, and 17.

4) the mean test scores for the boys at each age level 10-17 were higher in 1965 than in 1958.

5) the mean test scores for boys in general showed improvement from ages 10 through 17 for each of the 7 tests.

6) the mean test scores for boys 10-17 for 1965, parallel the 1958 data but are at a higher level of performance.

7) the differences in the mean test scores for boys between 1958 and 1965 were significantly different at the 5 per cent level in 54 instances and were not significantly different at this level in 2 comparisons. Significant improvements were observed in: pull-ups, ages 10, 11, 12, 13, 14, 15, 16 and 17; sit-ups, ages 10, 11, 12, 13, 14, 15, 16 and 17; shuttle run, ages 10, 11, 12, 13, 14, 15, 16 and 17; standing broad jump, ages 10, 11, 12, 13, 14, 15, 16 and 17; 50-yard dash, ages 10, 11, 12, 13, 14, 15 and 16; softball throw, ages 10, 11, 12, 13, 14, 15 and 16 and the 600-yard run, ages 10, 11, 12, 13, 14, 15, 16 and 17.

8) the variance in test scores at each age level and for both boys and girls is large and with few exceptions it is

possible to find a ten-year old pupil who can out-perform a seventeen year old.

9) the intercorrelations between the test items at the various age levels were of a low order with 75 per cent of them below .40; 54 of the intercorrelations for the boys data were between .41 and .60 whereas 28 of the interrelationships for the girls data were in this range.

10) in summary it should be stated that the physical fitness level of public school children, grades 5-12, in 1965 was above that in 1958.

DISCUSSION

The investigation did show improvements in many of the test scores and some estimates as to why these occurred might by timely. In the first place when the initial survey was made during 1957-58 the test battery was virtually unknown. Admittedly there was nothing novel or unique about the test items but the configuration of these seven tests was created in February, 1957. Consequently there was little chance for teachers to orient the pupils with the test battery. Since 1958, it has been estimated that over 25 million pupils have had some exposure to the test. In fact, during the visitations of 1964-65 it was encouraging to note the wide-spread usage of the test battery. In many places the test was an integral part of the program and it was a rarity to find anyone not familiar with it.

The promotional work of the American Association for Health, Physical Education and Recreation did much to influence the wide-spread use of the test battery. In addition to this, the President's Council on Physical Fitness, by adopting the test, gave it immeasurable publicity through their publications, news releases and television plugs. The impact of the Council on the extensive usage and acceptance of the test would be difficult to assess. These two organizations plus numerous newspaper and periodical articles certainly set the stage for a receptive public school population.

The fact that every school system in the coterminous United States agreed to take part in the project is indicative of the attitude of the public toward physical fitness. The same cooperation was experienced in Alaska where school personnel at both the state and local levels gave generously of their time and efforts to assist in the project. Unfortunately, the same type of receptiveness was not extended in Hawaii. In fairness to the Director of Physical Education in Hawaii it must be stated that she was willing to cooperate.

While it is difficult to pinpoint the reasons for the improvement in the 1965 data any educated estimates would suggest that the greater familiarity of school pupils with the test battery and the greater interest of school personnel in physical fitness were two factors influencing the results.

In the course of directing two national studies of this magnitude opportunities were available for meeting literally hundreds of school people and discussing various aspects of testing. A host of questions have been asked about the topic as well as on curriculum problems. It might be appropriate to mention the nature of these discussions and offer suggestions which it is hoped will prove helpful.

Numerous teachers have been interested in using a single index score and the customary procedure has been to average the percentile scores of the seven tests. While this makes a convenient and rather precise mathematical figure the procedure is a questionable one. In the first place the tests were selected because they measured different aspects of fitness. The fact that the interrelations among the tests are below .40 in 75 per cent of the cases substantiates the thinking of the original committee which selected the test battery. Aside from this, the practice of averaging eliminates any diagnostic value which the separate fitness test may have. Retaining the individual identity of the tests permits the teacher to spot components of fitness which are low. An analogous procedure would be to ask a doctor to average the findings of a chest plate, red blood count, white count, electrocardiograph and blood pressure reading taken during a medical exam. Obviously, each item in the examination has its own significance.

Some people have asked about the possible differences in fitness levels in pupils from various sections of the country. The original sample was not drawn with this problem in mind since it was relegated to a less important role. A subsequent analysis may be made in an effort to see if there are any trends along these lines. One thing can be said with a fair degree of certainty and that is that there are good and poor programs in all sections of the country and the determining factor seems to ultimately rest with the teacher. If he or she is interested in the fitness level of the pupils the program will reflect this interest and the test results will substantiate it.

On other occasions teachers have expressed a desire to compare scores from pupils in their school with those of other schools. While it is admitted that comparisons are at times interesting and it is certainly helpful to have national norms available it is probably more important that the pupil compare his score with one of his own previous performances. A cumulative record of this kind can serve as a stimulus for fitness activities.

A few remarks regarding physical education programs might be of some interest. The lack of any planned progression through the grades is an old criticism which still holds in too many schools. While efforts have been made to make programs more vigorous the low physical demands in programs are all too numerous. The allocation of time for physical education is still inadequate in too many school systems. The acquisition of a motor skill takes literally hundreds of hours and and teachers must rely on out-of-school challenges if they have any intention of raising skill levels to a point of competence. The results on the softball throw for girls are a good case in point. It takes considerably more time to develop this skill than it does to improve the score on the sit-ups or the 600-yard run. Actually the same principle holds in other skills which a pupil may acquire. It would be a rarity to expect a pupil to become an expert pianist while restricting him to the time and program allocated for music in the public schools.

Practice out of school hours is mandatory for excellence in performance.

In recounting some of the original discussions of 1957 regarding the launching of a testing project a few committee members expressed fears that some teachers would consider the test items as the program of physical education. Fortunately, this has not occurred. And if a guess were permitted it would be that the teachers who take the time to plan testing and get the results to the pupils also take the time to plan other phases of the program.

The authors have had occasions to see many fine fitness programs in operation and the teachers are to be complimented for their efforts in this direction. However, a word of caution may be warranted. It is possible to improve the fitness level of practically any group of school children by increasing the physical and physiological demands on their bodies. This has been demonstrated since time immemorial. The point which has been overlooked in all too many instances is sensitizing the pupil to the need for maintaining a fitness level throughout life. This should be the ultimate objective of a physical fitness program. To do this it is necessary to change the value system of those not interested in fitness so that they are willing to allocate time and effort throughout life to the development and maintenance of physical fitness.

Appendix A

TABLE 1. FLEXED ARM HANG FOR GIRLS

Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	66	79	64	80	60	74	74	76	100th
95th	31	35	30	30	30	33	37	31	95th
90th	24	25	23	21	22	22	26	25	90th
85th	21	20	19	18	19	18	19	19	85th
80th	18	17	15	15	16	16	16	16	80th
75th	15	16	13	13	13	14	14	14	75th
70th	13	13	11	12	11	13	12	12	70th
65th	11	11	10	10	10	11	10	11	65th
60th	10	10	8	9	9	10	9	10	60th
55th	9	9	8	8	8	8	8	9	55th
50th	7	8	6	7	7	8	7	8	50th
45th	6	6	6	6	6	6	6	7	45th
40th	6	5	5	5	5	6	5	6	40th
35th	5	4	4	4	4	4	4	4	35th
30th	4	4	3	3	3	3	3	4	30th
25th	3	3	2	2	2	2	2	3	25th
20th	2	2	1	2	1	1	1	2	20th
15th	2	1	0	1	1	0	1	0	15th
10th	1	0	0	0	0	0	0	0	10th
5th	0	0	0	0	0	0	0	0	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 2. SIT-UPS FOR GIRLS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	50	50	50	50	50	50	50	50	100th
95th	50	50	50	50	50	50	50	50	95th
90th	50	50	50	50	50	50	50	50	90th
85th	50	50	50	50	50	50	50	50	85th
80th	50	50	50	50	49	42	41	45	80th
75th	50	50	50	50	42	39	38	40	75th
70th	50	50	50	45	37	35	34	35	70th
65th	42	40	40	40	35	31	31	32	65th
60th	39	37	39	38	34	30	30	30	60th
55th	33	34	35	35	31	29	28	29	55th
50th	31	30	32	31	30	26	26	27	50th
45th	30	29	30	30	27	25	25	25	45th
40th	26	26	26	27	25	24	24	23	40th
35th	24	25	25	25	23	21	22	21	35th
30th	21	22	22	22	21	20	20	20	30th
25th	20	20	20	20	20	19	18	18	25th
20th	16	19	18	19	18	16	16	16	20th
15th	14	16	16	15	16	14	14	15	15th
10th	11	12	13	12	13	11	11	12	10th
5th	8	10	7	10	10	8	7	9	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 3. SHUTTLE RUN FOR GIRLS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	8.5	8.8	9.0	8.3	9.0	8.0	8.3	9.0	100th
95th	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	95th
90th	10.5	10.2	10.2	10.2	10.3	10.3	10.2	10.3	90th
85th	10.8	10.6	10.5	10.5	10.4	10.5	10.4	10.4	85th
80th	11.0	10.9	10.8	10.6	10.5	10.7	10.6	10.5	80th
75th	11.0	11.0	10.9	10.8	10.6	10.9	10.8	10.6	75th
70th	11.1	11.0	11.0	11.0	10.8	11.0	10.9	10.8	70th
65th	11.4	11.2	11.2	11.0	10.9	11.0	11.0	11.0	65th
60th	11.5	11.4	11.3	11.1	11.0	11.1	11.0	11.0	60th
55th	11.8	11.6	11.5	11.3	11.1	11.2	11.2	11.1	55th
50th	11.9	11.7	11.6	11.4	11.3	11.3	11.2	11.2	50th
45th	12.0	11.8	11.8	11.6	11.4	11.5	11.4	11.4	45th
40th	12.0	12.0	11.9	11.8	11.5	11.6	11.5	11.5	40th
35th	12.1	12.0	12.0	12.0	11.7	11.8	11.8	11.6	35th
30th	12.4	12.1	12.1	12.0	12.0	11.9	12.0	11.8	30th
25th	12.6	12.4	12.3	12.2	12.0	12.0	12.0	12.0	25th
20th	12.8	12.6	12.5	12.5	12.3	12.3	12.2	12.0	20th
15th	13.0	13.0	12.9	13.0	12.6	12.5	12.5	12.3	15th
10th	13.1	13.4	13.2	13.3	13.1	13.0	13.0	13.0	10th
5th	14.0	14.1	13.9	14.0	13.9	13.5	13.9	13.8	5th
0th	16.6	18.5	19.8	18.5	17.6	16.0	17.6	20.0	0th

TABLE 4. STANDING BROAD JUMP FOR GIRLS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	7' 0"	7'10"	8' 2"	7' 6"	7' 4"	7' 8"	7' 5"	7' 8"	100th
95th	5' 8"	6' 2"	6' 3"	6' 3"	6' 4"	6' 6"	6' 7"	6' 8"	95th
90th	5' 6"	5'10"	6' 0"	6' 0"	6' 2"	6' 3"	6' 4"	6' 4"	90th
85th	5' 4"	5' 8"	5' 9"	5'10"	6' 0"	6' 1"	6' 2"	6' 2"	85th
80th	5' 2"	5' 6"	5' 8"	5' 8"	5'10"	6' 0"	6' 0"	6' 0"	80th
75th	5' 1"	5' 4"	5' 6"	5' 6"	5' 9"	5'10"	5'10"	5'11"	75th
70th	5' 0"	5' 3"	5' 5"	5' 5"	5' 7"	5' 9"	5' 8"	5'10"	70th
65th	5' 0"	5' 2"	5' 4"	5' 4"	5' 6"	5' 7"	5' 7"	5' 9"	65th
60th	4'10"	5' 0"	5' 2"	5' 3"	5' 5"	5' 6"	5' 6"	5' 7"	60th
55th	4' 9"	5' 0"	5' 1"	5' 2"	5' 4"	5' 5"	5' 5"	5' 6"	55th
50th	4' 7"	4'10"	5' 0"	5' 0"	5' 3"	5' 4"	5' 4"	5' 5"	50th
45th	4' 6"	4' 9"	4'11"	5' 0"	5' 1"	5' 3"	5' 3"	5' 3"	45th
40th	4' 5"	4' 8"	4' 9"	4'10"	5' 0"	5' 1"	5' 2"	5' 2"	40th
35th	4' 4"	4' 7"	4' 8"	4' 8"	5' 0"	5' 0"	5' 0"	5' 0"	35th
30th	4' 3"	4' 6"	4' 7"	4' 6"	4' 9"	4'10"	4'11"	5' 0"	30th
25th	4' 2"	4' 4"	4' 5"	4' 6"	4' 8"	4' 8"	4'10"	4'10"	25th
20th	4' 0"	4' 3"	4' 4"	4' 4"	4' 6"	4' 7"	4' 8"	4' 9"	20th
15th	3'11"	4' 1"	4' 2"	4' 2"	4' 3"	4' 6"	4' 6"	4' 7"	15th
10th	3' 9"	3'11"	4' 0"	4' 0"	4' 1"	4' 4"	4' 4"	4' 5"	10th
5th	3' 6"	3' 9"	3' 8"	3' 9"	3'10"	4' 0"	4' 0"	4' 2"	5th
0th	2' 8"	2'11"	2'11"	2'11"	3' 0"	2'11"	3' 2"	3' 0"	0th

TABLE 5. 50-YARD DASH FOR GIRLS

Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	6.0	6.0	5.9	6.0	6.0	6.4	6.0	6.4	100th
95th	7.0	7.0	7.0	7.0	7.0	7.1	7.0	7.1	95th
90th	7.3	7.4	7.3	7.3	7.2	7.3	7.3	7.3	90th
85th	7.5	7.6	7.5	7.5	7.4	7.5	7.5	7.5	85th
80th	7.7	7.7	7.6	7.6	7.5	7.6	7.5	7.6	80th
75th	7.9	7.9	7.8	7.7	7.6	7.7	7.7	7.8	75th
70th	8.0	8.0	7.9	7.8	7.7	7.8	7.9	7.9	70th
65th	8.1	8.0	8.0	7.9	7.8	7.9	8.0	8.0	65th
60th	8.2	8.1	8.0	8.0	7.9	8.0	8.0	8.0	60th
55th	8.4	8.2	8.1	8.0	8.0	8.0	8.1	8.1	55th
50th	8.5	8.4	8.2	8.1	8.0	8.1	8.3	8.2	50th
45th	8.6	8.5	8.3	8.2	8.2	8.2	8.4	8.3	45th
40th	8.8	8.5	8.4	8.4	8.3	8.3	8.5	8.5	40th
35th	8.9	8.6	8.5	8.5	8.5	8.4	8.6	8.6	35th
30th	9.0	8.8	8.7	8.6	8.6	8.6	8.8	8.8	30th
25th	9.0	9.0	8.9	8.8	8.9	8.8	9.0	9.0	25th
20th	9.2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	20th
15th	9.4	9.2	9.2	9.2	9.2	9.0	9.2	9.1	15th
10th	9.6	9.6	9.5	9.5	9.5	9.5	9.9	9.5	10th
5th	10.0	10.0	10.0	10.2	10.4	10.0	10.5	10.4	5th
0th	14.0	13.0	13.0	15.7	16.0	18.0	17.0	12.0	0th

TABLE 6. SOFTBALL THROW FOR GIRLS

Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	167	141	159	150	156	165	175	183	100th
95th	84	95	103	111	114	120	123	120	95th
90th	76	86	96	102	103	110	113	108	90th
85th	71	81	90	94	100	105	104	102	85th
80th	69	77	85	90	95	100	98	98	80th
75th	65	74	80	86	90	95	92	93	75th
70th	60	71	76	82	87	90	89	90	70th
65th	57	66	74	79	84	87	85	87	65th
60th	54	64	70	75	80	84	81	82	60th
55th	52	62	67	73	78	82	78	80	55th
50th	50	59	64	70	75	78	75	75	50th
45th	48	57	61	68	72	75	74	74	45th
40th	46	55	59	65	70	73	71	71	40th
35th	45	52	57	63	68	69	69	69	35th
30th	42	50	54	60	65	66	66	66	30th
25th	40	46	50	57	61	64	63	62	25th
20th	37	44	48	53	59	60	60	58	20th
15th	34	40	45	49	54	58	55	52	15th
10th	30	37	41	45	50	51	50	48	10th
5th	21	32	37	36	45	45	45	40	5th
0th	8	13	20	20	25	12	8	20	0th

TABLE 7. 600-YARD RUN-WALK FOR GIRLS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	1'42"	1'40"	1'39"	1'40"	1'45"	1'40"	1'50"	1'54"	100th
95th	2' 5"	2'13"	2'14"	2'12"	2' 9"	2' 9"	2'10"	2'11"	95th
90th	2'15"	2'19"	2'20"	2'19"	2'18"	2'18"	2'17"	2'22"	90th
85th	2'20"	2'24"	2'24"	2'25"	2'22"	2'23"	2'23"	2'27"	85th
80th	2'26"	2'28"	2'27"	2'29"	2'25"	2'26"	2'26"	2'31"	80th
75th	2'30"	2'32"	2'31"	2'33"	2'30"	2'28"	2'31"	2'34"	75th
70th	2'34"	2'36"	2'35"	2'37"	2'34"	2'34"	2'36"	2'37"	70th
65th	2'37"	2'39"	2'39"	2'40"	2'37"	2'36"	2'39"	2'42"	65th
60th	2'41"	2'43"	2'42"	2'44"	2'41"	2'40"	2'42"	2'46"	60th
55th	2'45"	2'47"	2'45"	2'47"	2'44"	2'43"	2'45"	2'49"	55th
50th	2'48"	2'49"	2'49"	2'52"	2'46"	2'46"	2'49"	2'51"	50th
45th	2'50"	2'53"	2'55"	2'56"	2'51"	2'49"	2'53"	2'57"	45th
40th	2'55"	2'59"	2'58"	3' 0"	2'55"	2'52"	2'56"	3' 0"	40th
35th	2'59"	3' 4"	3' 3"	3' 3"	3' 0"	2'56"	2'59"	3' 5"	35th
30th	3' 3"	3'10"	3' 7"	3' 9"	3' 6"	3' 0"	3' 1"	3'10"	30th
25th	3' 8"	3'15"	3'11"	3'15"	3'12"	3' 5"	3' 7"	3'16"	25th
20th	3'13"	3'22"	3'18"	3'20"	3'19"	3'10"	3'12"	3'22"	20th
15th	3'18"	3'30"	3'24"	3'30"	3'30"	3'18"	3'19"	3'29"	15th
10th	3'27"	3'41"	3'40"	3'49"	3'48"	3'28"	3'30"	3'41"	10th
5th	3'45"	3'59"	4' 0"	4'11"	4' 8"	3'56"	3'45"	3'56"	5th
0th	4'47"	4'53"	5'10"	5'10"	5'50"	5'10"	5'52"	6'40"	0th

TABLE 8. PULL-UPS FOR BOYS

Percentile Scores Based on Age

Percentile	Age 10	 11	 12	 13	 14	 15	 16	 17	Percentile
100th	16	20	15	24	20	25	25	32	100th
95th	8	8	9	10	12	13	14	16	95th
90th	7	7	7	9	10	11	13	14	90th
85th	6	6	6	8	10	10	12	12	85th
80th	5	5	5	7	8	10	11	12	80th
75th	4	4	5	6	8	9	10	10	75th
70th	4	4	4	5	7	8	10	10	70th
65th	3	3	3	5	6	7	9	10	65th
60th	3	3	3	4	6	7	9	9	60th
55th	3	2	3	4	5	6	8	8	55th
50th	2	2	2	3	5	6	7	8	50th
45th	2	2	2	3	4	5	6	7	45th
40th	1	1	1	2	4	5	6	7	40th
35th	1	1	1	2	3	4	5	6	35th
30th	1	1	1	1	3	4	5	5	30th
25th	0	0	0	1	2	3	4	5	25th
20th	0	0	0	0	2	3	4	4	20th
15th	0	0	0	0	1	2	3	4	15th
10th	0	0	0	0	0	1	2	2	10th
5th	0	0	0	0	0	0	0	1	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 9. SIT-UPS FOR BOYS

Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	100	100	100	100	100	100	100	100	100th
95th	100	100	100	100	100	100	100	100	95th
90th	100	100	100	100	100	100	100	100	90th
85th	100	100	100	100	100	100	100	100	85th
80th	76	89	100	100	100	100	100	100	80th
75th	65	73	93	100	100	100	100	100	75th
70th	57	60	75	99	100	100	100	100	70th
65th	51	55	70	90	99	100	99	99	65th
60th	50	50	59	75	99	99	99	85	60th
55th	49	50	52	70	77	90	85	77	55th
50th	41	46	50	60	70	80	76	70	50th
45th	37	40	49	53	62	70	70	62	45th
40th	34	35	42	50	60	61	63	57	40th
35th	30	31	40	50	52	54	56	51	35th
30th	28	30	35	41	50	50	50	50	30th
25th	25	26	30	38	45	49	50	45	25th
20th	23	23	28	35	40	42	42	40	20th
15th	20	20	25	30	36	39	38	35	15th
10th	15	17	20	25	30	33	34	30	10th
5th	11	12	15	20	24	27	28	23	5th
0th	1	0	0	1	6	5	10	8	0th

TABLE 10. SHUTTLE RUN FOR BOYS

Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	9.0	9.0	8.5	8.0	8.3	8.0	8.1	8.0	100th
95th	10.0	10.0	9.8	9.5	9.3	9.1	9.0	8.9	95th
90th	10.2	10.1	10.0	9.8	9.5	9.3	9.1	9.0	90th
85th	10.4	10.3	10.0	9.9	9.6	9.4	9.2	9.1	85th
80th	10.5	10.4	10.2	10.0	9.8	9.5	9.3	9.2	80th
75th	10.7	10.5	10.3	10.1	9.9	9.6	9.5	9.3	75th
70th	10.8	10.7	10.5	10.2	9.9	9.7	9.5	9.4	70th
65th	10.9	10.8	10.6	10.3	10.0	9.8	9.6	9.5	65th
60th	11.0	10.9	10.7	10.4	10.0	9.8	9.7	9.6	60th
55th	11.0	11.0	10.9	10.5	10.2	9.9	9.8	9.7	55th
50th	11.2	11.1	11.0	10.6	10.2	10.0	9.9	9.8	50th
45th	11.4	11.2	11.0	10.8	10.3	10.0	10.0	9.9	45th
40th	11.5	11.3	11.1	10.9	10.5	10.1	10.0	10.0	40th
35th	11.6	11.4	11.3	11.0	10.5	10.2	10.1	10.0	35th
30th	11.8	11.6	11.5	11.1	10.7	10.3	10.2	10.1	30th
25th	12.0	11.8	11.6	11.3	10.9	10.5	10.4	10.4	25th
20th	12.0	12.0	11.9	11.5	11.0	10.6	10.5	10.6	20th
15th	12.2	12.1	12.0	11.8	11.2	10.9	10.8	10.9	15th
10th	12.6	12.4	12.4	12.0	11.5	11.1	11.1	11.2	10th
5th	13.1	13.0	13.0	12.5	12.0	11.7	11.5	11.7	5th
0th	15.0	20.0	22.0	16.0	16.0	16.6	16.7	14.0	0th

TABLE 11. STANDING BROAD JUMP FOR BOYS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	6' 8"	10' 0"	7'10"	8' 9"	8'11"	9' 2"	9' 1"	9' 8"	100th
95th	6' 1"	6' 3"	6' 6"	7' 2"	7' 9"	8' 0"	8' 5"	8' 6"	95th
90th	5'10"	6' 0"	6' 4"	6'11"	7' 5"	7' 9"	8' 1"	8' 3"	90th
85th	5' 8"	5'10"	6' 2"	6' 9"	7' 3"	7' 6"	7'11"	8' 1"	85th
80th	5' 7"	5' 9"	6' 1"	6' 7"	7' 0"	7' 6"	7' 9"	8' 0"	80th
75th	5' 6"	5' 7"	6' 0"	6' 5"	6'11"	7' 4"	7' 7"	7'10"	75th
70th	5' 5"	5' 6"	5'11"	6' 3"	6' 9"	7' 2"	7' 6"	7' 8"	70th
65th	5' 4"	5' 6"	5' 9"	6' 1"	6' 8"	7' 1"	7' 5"	7' 7"	65th
60th	5' 2"	5' 4"	5' 8"	6' 0"	6' 7"	7' 0"	7' 4"	7' 6"	60th
55th	5' 1"	5' 3"	5' 7"	5'11"	6' 6"	6'11"	7' 3"	7' 5"	55th
50th	5' 0"	5' 2"	5' 6"	5'10"	6' 4"	6' 9"	7' 1"	7' 3"	50th
45th	5' 0"	5' 1"	5' 5"	5' 9"	6' 3"	6' 8"	7' 0"	7' 2"	45th
40th	4'10"	5' 0"	5' 4"	5' 7"	6' 1"	6' 6"	6'11"	7' 0"	40th
35th	4'10"	4'11"	5' 2"	5' 6"	6' 0"	6' 6"	6' 9"	6'11"	35th
30th	4' 8"	4'10"	5' 1"	5' 5"	5'10"	6' 4"	6' 7"	6'10"	30th
25th	4' 6"	4' 8"	5' 0"	5' 3"	5' 8"	6' 3"	6' 6"	6' 8"	25th
20th	4' 5"	4' 7"	4'10"	5' 2"	5' 6"	6' 1"	6' 4"	6' 6"	20th
15th	4' 4"	4' 5"	4' 8"	5' 0"	5' 4"	5'10"	6' 1"	6' 4"	15th
10th	4' 3"	4' 2"	4' 5"	4' 9"	5' 2"	5' 7"	5'11"	6' 0"	10th
5th	4' 0"	4' 0"	4' 2"	4' 5"	4'11"	5' 4"	5' 6"	5' 8"	5th
0th	2'10"	1' 8"	3' 0"	2' 9"	3' 8"	2'10"	2' 2"	3' 7"	0th

TABLE 12. 50-YARD DASH FOR BOYS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	6.0	6.0	6.0	5.8	5.8	5.6	5.6	5.6	100th
95th	7.0	7.0	6.8	6.5	6.3	6.1	6.0	6.0	95th
90th	7.1	7.2	7.0	6.7	6.4	6.2	6.1	6.0	90th
85th	7.4	7.4	7.0	6.9	6.6	6.4	6.2	6.1	85th
80th	7.5	7.5	7.2	7.0	6.7	6.5	6.3	6.2	80th
75th	7.6	7.6	7.3	7.0	6.8	6.5	6.3	6.3	75th
70th	7.8	7.7	7.5	7.1	6.9	6.6	6.4	6.3	70th
65th	8.0	7.8	7.5	7.2	7.0	6.7	6.5	6.4	65th
60th	8.0	7.8	7.6	7.3	7.0	6.7	6.5	6.5	60th
55th	8.1	8.0	7.8	7.4	7.0	6.8	6.6	6.5	55th
50th	8.2	8.0	7.8	7.5	7.1	6.9	6.7	6.6	50th
45th	8.3	8.0	7.9	7.5	7.2	7.0	6.7	6.7	45th
40th	8.5	8.1	8.0	7.6	7.2	7.0	6.8	6.7	40th
35th	8.5	8.3	8.0	7.7	7.3	7.1	6.9	6.8	35th
30th	8.7	8.4	8.2	7.9	7.5	7.1	6.9	6.9	30th
25th	8.8	8.5	8.3	8.0	7.6	7.2	7.0	7.0	25th
20th	9.0	8.7	8.4	8.0	7.8	7.3	7.1	7.0	20th
15th	9.1	9.0	8.6	8.2	8.0	7.5	7.2	7.1	15th
10th	9.5	9.1	8.9	8.4	8.1	7.7	7.5	7.3	10th
5th	10.0	9.5	9.2	8.9	8.6	8.1	7.8	7.7	5th
0th	12.0	11.9	12.0	11.1	11.6	12.0	8.6	10.6	0th

TABLE 13. SOFTBALL THROW FOR BOYS

Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	175	205	207	245	246	250	271	291	100th
95th	138	151	165	195	208	221	238	249	95th
90th	127	141	156	183	195	210	222	235	90th
85th	122	136	150	175	187	204	213	226	85th
80th	118	129	145	168	181	198	207	218	80th
75th	114	126	141	163	176	192	201	213	75th
70th	109	121	136	157	172	189	197	207	70th
65th	105	119	133	152	168	184	194	203	65th
60th	102	115	129	147	165	180	189	198	60th
55th	98	113	124	142	160	175	185	195	55th
50th	96	111	120	140	155	171	180	190	50th
45th	93	108	119	135	150	167	175	185	45th
40th	91	105	115	131	146	165	172	180	40th
35th	89	101	112	128	141	160	168	176	35th
30th	84	98	110	125	138	156	165	171	30th
25th	81	94	106	120	133	152	160	163	25th
20th	78	90	103	115	127	147	153	155	20th
15th	73	85	97	110	122	141	147	150	15th
10th	69	78	92	101	112	135	141	141	10th
5th	60	70	76	88	102	123	127	117	5th
0th	35	14	25	50	31	60	30	31	0th

TABLE 14. 600-YARD RUN-WALK FOR BOYS

Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	1'30"	1'27"	1'31"	1'29"	1'25"	1'26"	1'24"	1'23"	100th
95th	1'58"	1'59"	1'52"	1'46"	1'37"	1'34"	1'32"	1'31"	95th
90th	2' 9"	2' 3"	2' 0"	1'50"	1'42"	1'38"	1'35"	1'34"	90th
85th	2'12"	2' 8"	2' 2"	1'53"	1'46"	1'40"	1'37"	1'36"	85th
80th	2'15"	2'11"	2' 5"	1'55"	1'48"	1'42"	1'39"	1'38"	80th
75th	2'18"	2'14"	2' 9"	1'59"	1'51"	1'44"	1'40"	1'40"	75th
70th	2'20"	2'16"	2'11"	2' 1"	1'53"	1'46"	1'43"	1'42"	70th
65th	2'23"	2'19"	2'13"	2' 3"	1'55"	1'47"	1'45"	1'44"	65th
60th	2'26"	2'21"	2'15"	2' 5"	1'57"	1'49"	1'47"	1'45"	60th
55th	2'30"	2'24"	2'18"	2' 7"	1'59"	1'51"	1'49"	1'48"	55th
50th	2'33"	2'27"	2'21"	2'10"	2' 1"	1'54"	1'51"	1'50"	50th
45th	2'36"	2'30"	2'24"	2'12"	2' 3"	1'55"	1'53"	1'52"	45th
40th	2'40"	2'33"	2'26"	2'15"	2' 5"	1'58"	1'56"	1'54"	40th
35th	2'43"	2'36"	2'30"	2'17"	2' 9"	2' 0"	1'58"	1'57"	35th
30th	2'45"	2'39"	2'34"	2'22"	2'11"	2' 3"	2' 1"	2' 0"	30th
25th	2'49"	2'42"	2'39"	2'25"	2'14"	2' 7"	2' 5"	2' 4"	25th
20th	2'55"	2'48"	2'47"	2'30"	2'19"	2'13"	2' 9"	2' 9"	20th
15th	3' 1"	2'55"	2'57"	2'35"	2'25"	2'20"	2'14"	2'16"	15th
10th	3' 8"	3' 9"	3' 8"	2'45"	2'33"	2'32"	2'22"	2'26"	10th
5th	3'23"	3'30"	3'32"	3' 3"	2'47"	2'50"	2'37"	2'40"	5th
0th	4'58"	5' 6"	4'55"	5'14"	5'10"	4'10"	4' 9"	4'45"	0th

TABLE 15. CLASSIFICATION INDEX FOR BOYS AND GIRLS
Grades 5, 6, 7, 8, 9

Exponent	Age (Months)	Height (Inches)	Weight (Lbs.)	Sum of Exponents	Class
1	120-125	50-51	60-65	0-9	A
2	126-131	52-53	66-70	10-14	B
3	132-137		71-75	15-19	C
4	138-143	54-55	76-80	20-24	D
5	144-149		81-85	25-29	E
6	150-155	56-57	86-90	30-34	F
7	156-161		91-95	35-38	G
8	162-167	58-59	96-100	39-above	H
9	168-173		101-105		
10	174-179	60-61	106-110		
11	180-185		111-115		
12	186-191	62-63	116-120		
13	192-197		121-125		
14	198-203	64-65	126-130		
15	204-209	66-67	131-133		
16	210-215	68	134-136		
17	216-	69	137		

TABLE 16. CLASSIFICATION INDEX FOR BOYS*
Grades 10, 11, 12

Exponent	Age (Months)	Height (Inches)	Weight (Lbs.)	Sum of Exponents	Class
9			53-59	88 and over	A
10			60-65	83-87	B
11			66-71	82 and below	C
12			72-78		
13			79-84		
14			85-90		
15			91-96		
16			97-103		
17			104-109		
18			110-115		
19			116-121		
20			122-128		
21			129-134		
22		0-47	135-140		
23		47.5-49	141-146		
24		49.5-51.5	147-153		
25		52-53.5	154-159		
26		54-55.5	160-165		
27	159-164	56-57.5	166-171		
28	165-170	58-59.5	172-178		
29	171-176	60-62	179-184		
30	177-182	62.5-64	185-190		
31	183-188	64.5-66	191-		
32	189-194	66.5-68			
33	195-200	68.5-70.5			
34	201-206	71-72.5			
35	207-212	73-74.5			
36	213-218	75-			
37	219-224				
38	225-230				

* For girls in grades 10, 11, and 12, see Tables 17-23, column HSG.

TABLE 17. FLEXED ARM HANG FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	72	70	80	64	61	61	64	40	76	100th
95th	39	35	35	28	31	30	17	17	34	95th
90th	29	27	27	22	23	21	13	14	25	90th
85th	24	22	23	18	20	18	11	11	20	85th
80th	21	19	20	15	17	14	11	9	17	80th
75th	18	17	18	13	14	13	9	7	14	75th
70th	16	15	16	11	12	11	8	6	13	70th
65th	14	13	14	10	11	10	7	5	11	65th
60th	12	11	12	9	9	9	6	4	10	60th
55th	11	10	10	8	8	8	5	2	8	55th
50th	10	8	9	7	7	7	4	2	8	50th
45th	9	7	8	6	6	6	3	2	6	45th
40th	8	6	7	6	5	5	2	1	6	40th
35th	7	6	6	5	4	4	2	1	4	35th
30th	6	5	5	4	3	3	1	1	4	30th
25th	5	4	4	3	3	2	0	0	2	25th
20th	4	4	3	2	2	1	0	0	2	20th
15th	3	2	2	1	1	0	0	0	1	15th
10th	2	2	1	0	0	0	0	0	0	10th
5th	1	0	0	0	0	0	0	0	0	5th
0th	0	0	0	0	0	0	0	0	0	0th

TABLE 18. SIT-UPS FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	50	50	50	50	50	50	50	50	50	100th
95th	50	50	50	50	50	50	50	50	50	95th
90th	50	50	50	50	50	50	50	50	50	90th
85th	50	50	50	50	50	50	49	48	50	85th
80th	50	50	50	50	50	50	43	43	41	80th
75th	50	50	50	50	50	49	38	39	38	75th
70th	46	50	50	47	47	44	35	35	35	70th
65th	40	46	50	40	40	40	32	34	32	65th
60th	38	40	45	37	37	36	30	30	30	60th
55th	34	35	40	33	34	34	29	29	29	55th
50th	31	32	35	31	31	31	25	27	26	50th
45th	30	30	31	30	29	30	25	25	25	45th
40th	26	27	30	27	26	27	22	23	24	40th
35th	24	26	25	25	24	25	20	21	21	35th
30th	22	22	23	22	21	23	20	20	20	30th
25th	20	20	20	20	20	21	17	18	18	25th
20th	17	18	18	18	19	20	15	15	16	20th
15th	15	16	16	16	15	16	13	14	14	15th
10th	10	13	11	13	13	13	10	12	12	10th
5th	8	9	8	10	9	10	8	9	8	5th
0th	1	2	0	0	0	0	1	3	0	0th

TABLE 19. SHUTTLE RUN FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	8.5	8.8	9.0	8.9	9.0	9.0	8.3	9.3	8.0	100th
95th	9.5	10.0	10.0	9.9	10.0	10.0	10.1	10.1	10.0	95th
90th	10.2	10.5	10.2	10.2	10.2	10.2	10.3	10.5	10.2	90th
85th	10.7	10.8	10.5	10.5	10.5	10.5	10.5	10.6	10.4	85th
80th	11.0	11.0	10.8	10.8	10.6	10.5	10.6	10.8	10.6	80th
75th	11.0	11.0	11.0	11.0	10.8	10.7	10.8	10.9	10.8	75th
70th	11.1	11.2	11.0	11.0	11.0	10.9	11.0	11.0	10.9	70th
65th	11.3	11.4	11.2	11.1	11.0	11.0	11.0	11.1	11.0	65th
60th	11.5	11.6	11.4	11.3	11.1	11.0	11.2	11.3	11.0	60th
55th	11.6	11.7	11.5	11.4	11.3	11.2	11.3	11.5	11.1	55th
50th	11.8	11.8	11.5	11.6	11.5	11.4	11.5	11.6	11.3	50th
45th	12.0	11.9	11.7	11.8	11.7	11.5	11.7	11.8	11.4	45th
40th	12.0	12.0	11.9	12.0	12.0	11.7	11.8	12.0	11.5	40th
35th	12.2	12.0	12.0	12.0	12.0	11.9	12.0	12.2	11.7	35th
30th	12.5	12.2	12.0	12.1	12.1	12.0	12.0	12.4	11.8	30th
25th	12.6	12.4	12.2	12.3	12.3	12.2	12.3	12.5	12.0	25th
20th	12.9	12.5	12.5	12.6	12.5	12.5	12.5	13.0	12.1	20th
15th	13.0	12.9	12.7	12.9	12.9	13.0	12.9	13.0	12.5	15th
10th	13.5	13.1	13.0	13.3	13.2	13.5	13.3	13.5	13.0	10th
5th	14.4	14.0	13.8	14.0	14.0	14.0	14.0	14.0	13.6	5th
0th	16.2	19.8	17.0	16.0	17.6	18.5	17.0	17.3	20.0	0th

TABLE 20. STANDING BROAD JUMP FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	7' 0"	7'10"	7'10"	7' 0"	7'10"	8' 2"	7' 4"	7' 4"	7' 8"	100th
95th	5' 8"	6' 0"	6' 2"	6' 1"	6' 4"	6' 3"	6' 3"	6' 5"	6' 7"	95th
90th	5' 5"	5' 8"	5'11"	5'11"	6' 0"	6' 1"	6' 0"	6' 2"	6' 4"	90th
85th	5' 3"	5' 6"	5' 8"	5' 8"	5'10"	5'11"	5' 9"	5'11"	6' 1"	85th
80th	5' 2"	5' 4"	5' 7"	5' 7"	5' 8"	5' 9"	5' 7"	5' 8"	6' 0"	80th
75th	5' 1"	5' 3"	5' 5"	5' 5"	5' 7"	5' 7"	5' 6"	5' 7"	5'10"	75th
70th	5' 0"	5' 2"	5' 4"	5' 4"	5' 6"	5' 6"	5' 5"	5' 6"	5' 9"	70th
65th	4'11"	5' 1"	5' 2"	5' 3"	5' 4"	5' 4"	5' 4"	5' 4"	5' 8"	65th
60th	4' 9"	5' 0"	5' 1"	5' 2"	5' 2"	5' 3"	5' 3"	5' 3"	5' 7"	60th
55th	4' 8"	4'11"	5' 0"	5' 1"	5' 1"	5' 2"	5' 2"	5' 1"	5' 6"	55th
50th	4' 7"	4'10"	4'11"	5' 0"	5' 0"	5' 1"	5' 0"	5' 0"	5' 4"	50th
45th	4' 6"	4' 8"	4'10"	4'11"	4'11"	5' 0"	5' 0"	4' 9"	5' 3"	45th
40th	4' 5"	4' 7"	4' 9"	4' 9"	4'10"	4'11"	4'10"	4' 9"	5' 2"	40th
35th	4' 4"	4' 6"	4' 8"	4' 8"	4' 8"	4' 9"	4' 9"	4' 8"	5' 0"	35th
30th	4' 4"	4' 5"	4' 6"	4' 7"	4' 7"	4' 7"	4' 7"	4' 6"	4'11"	30th
25th	4' 2"	4' 4"	4' 5"	4' 5"	4' 6"	4' 6"	4' 6"	4' 5"	4'10"	25th
20th	4' 0"	4' 2"	4' 3"	4' 4"	4' 4"	4' 4"	4' 5"	4' 4"	4' 8"	20th
15th	3'10"	4' 0"	4' 2"	4' 2"	4' 2"	4' 2"	4' 2"	4' 2"	4' 6"	15th
10th	3' 9"	3'11"	4' 0"	4' 0"	4' 0"	4' 0"	4' 0"	4' 0"	4' 4"	10th
5th	3' 6"	3' 7"	3' 7"	3'11"	3' 8"	3' 9"	3' 9"	3' 7"	4' 0"	5th
0th	3' 1"	2' 8"	3' 0"	2'11"	2'11"	2'11"	3' 1"	2'11"	3' 0"	0th

TABLE 21. 50-YARD DASH FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	6.5	6.0	6.0	6.0	6.0	5.9	6.0	6.0	6.0	100th
95th	7.0	7.0	7.0	7.2	7.0	7.0	7.3	7.2	7.0	95th
90th	7.4	7.5	7.3	7.4	7.2	7.2	7.5	7.4	7.2	90th
85th	7.6	7.6	7.5	7.6	7.5	7.4	7.6	7.5	7.4	85th
80th	7.8	7.8	7.7	7.7	7.6	7.5	7.8	7.6	7.6	80th
75th	8.0	7.9	7.8	7.9	7.7	7.6	7.8	7.8	7.7	75th
70th	8.0	8.0	7.9	7.9	7.8	7.8	7.9	7.9	7.8	70th
65th	8.2	8.0	8.0	8.0	7.9	7.9	8.0	8.0	7.9	65th
60th	8.3	8.2	8.0	8.0	8.0	7.9	8.0	8.1	8.0	60th
55th	8.5	8.3	8.2	8.1	8.1	8.0	8.1	8.2	8.0	55th
50th	8.5	8.4	8.3	8.2	8.2	8.1	8.3	8.2	8.1	50th
45th	8.7	8.5	8.4	8.3	8.3	8.3	8.4	8.4	8.3	45th
40th	8.8	8.6	8.5	8.4	8.4	8.4	8.4	8.5	8.4	40th
35th	9.0	8.8	8.6	8.5	8.5	8.5	8.6	8.6	8.5	35th
30th	9.0	8.9	8.8	8.7	8.6	8.7	8.8	8.8	8.7	30th
25th	9.0	9.0	9.0	8.9	8.8	8.9	9.0	9.0	8.9	25th
20th	9.2	9.1	9.1	9.0	9.0	9.0	9.1	9.2	9.0	20th
15th	9.6	9.2	9.2	9.1	9.2	9.4	9.3	9.4	9.1	15th
10th	10.0	9.5	9.5	9.5	9.5	9.7	9.7	9.6	9.5	10th
5th	10.0	10.0	9.8	10.0	10.0	10.5	10.4	10.0	10.3	5th
0th	11.5	11.6	11.3	12.0	14.0	15.7	13.0	11.0	18.0	0th

TABLE 22. SOFTBALL THROW FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	167	136	133	135	141	159	143	168	183	100th
95th	78	85	90	101	106	111	111	120	121	95th
90th	71	77	85	93	99	102	102	112	110	90th
85th	66	73	80	87	92	97	100	104	103	85th
80th	63	69	76	81	87	92	92	102	98	80th
75th	58	65	73	78	84	88	90	99	93	75th
70th	55	62	71	74	80	85	87	92	90	70th
65th	52	60	68	71	76	81	85	85	86	65th
60th	51	57	65	69	74	78	81	82	82	60th
55th	50	55	61	65	70	75	78	80	80	55th
50th	48	51	59	63	67	72	75	77	75	50th
45th	46	50	57	60	64	70	73	75	74	45th
40th	45	47	54	58	61	67	70	72	71	40th
35th	42	45	52	57	60	65	67	70	69	35th
30th	40	43	49	54	56	61	65	66	66	30th
25th	38	41	46	50	53	58	60	63	63	25th
20th	34	39	44	46	50	54	58	60	60	20th
15th	32	36	40	44	47	50	53	57	55	15th
10th	30	30	37	40	43	46	48	51	50	10th
5th	19	26	32	35	39	38	44	44	45	5th
0th	8	10	18	18	21	20	20	21	8	0th

TABLE 23. 600-YARD RUN-WALK FOR GIRLS

Percentile Scores Based on Classification Index

Percentile	Classification Index									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	1'46"	1'42"	1'46"	1'39"	1'40"	1'50"	1'55"	2' 4"	1'45"	100th
95th	2' 4"	2'10"	2'11"	2'10"	2'11"	2'13"	2'13"	2'19"	2'10"	95th
90th	2'15"	2'16"	2'17"	2'17"	2'19"	2'18"	2'22"	2'25"	2'18"	90th
85th	2'22"	2'22"	2'22"	2'23"	2'24"	2'25"	2'25"	2'30"	2'24"	85th
80th	2'25"	2'26"	2'26"	2'26"	2'27"	2'29"	2'30"	2'33"	2'27"	80th
75th	2'30"	2'30"	2'29"	2'30"	2'32"	2'33"	2'35"	2'38"	2'32"	75th
70th	2'34"	2'33"	2'32"	2'33"	2'36"	2'37"	2'40"	2'41"	2'35"	70th
65th	2'36"	2'36"	2'36"	2'37"	2'40"	2'40"	2'44"	2'46"	2'38"	65th
60th	2'41"	2'39"	2'39"	2'40"	2'43"	2'43"	2'47"	2'50"	2'42"	60th
55th	2'45"	2'43"	2'43"	2'45"	2'46"	2'47"	2'50"	2'55"	2'45"	55th
50th	2'47"	2'47"	2'45"	2'48"	2'50"	2'50"	2'54"	2'59"	2'48"	50th
45th	2'51"	2'49"	2'49"	2'51"	2'55"	2'55"	2'59"	3' 4"	2'52"	45th
40th	2'56"	2'51"	2'53"	2'55"	3' 0"	2'59"	3' 3"	3'10"	2'55"	40th
35th	3' 0"	2'55"	2'59"	3' 0"	3' 2"	3' 2"	3' 6"	3'13"	3' 0"	35th
30th	3' 5"	3' 1"	3' 3"	3' 7"	3' 6"	3' 9"	3'12"	3'16"	3' 3"	30th
25th	3' 9"	3' 7"	3'11"	3'11"	3'12"	3'13"	3'17"	3'21"	3' 9"	25th
20th	3'13"	3'13"	3'18"	3'16"	3'17"	3'18"	3'25"	3'29"	3'15"	20th
15th	3'18"	3'20"	3'25"	3'24"	3'25"	3'26"	3'43"	3'39"	3'24"	15th
10th	3'30"	3'30"	3'40"	3'38"	3'45"	3'40"	3'52"	3'48"	3'35"	10th
5th	3'45"	3'49"	3'59"	3'59"	4' 4"	4' 0"	4' 7"	4'11"	3'56"	5th
0th	4'30"	4'47"	5' 0"	4'53"	5'10"	5'10"	5'50"	5'30"	6'40"	0th

TABLE 24. PULL-UPS FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index								Percentile
	A	B	C	D	E	F	G	H	
100th	16	20	16	16	18	20	17	24	100th
95th	10	8	8	9	9	11	12	12	95th
90th	8	7	7	7	8	9	10	10	90th
85th	7	6	6	6	6	8	10	10	85th
80th	6	6	5	5	5	7	8	9	80th
75th	6	5	4	5	5	6	7	8	75th
70th	5	5	4	4	4	6	6	7	70th
65th	5	4	3	4	3	5	5	7	65th
60th	4	4	3	3	3	4	5	6	60th
55th	4	3	3	3	2	4	4	6	55th
50th	3	3	2	2	2	3	4	5	50th
45th	3	3	2	2	2	3	3	5	45th
40th	3	2	1	1	1	2	2	4	40th
35th	2	2	1	1	1	2	2	3	35th
30th	2	2	1	1	1	1	1	3	30th
25th	1	1	0	0	0	1	1	2	25th
20th	1	1	0	0	0	0	0	1	20th
15th	0	0	0	0	0	0	0	1	15th
10th	0	0	0	0	0	0	0	0	10th
5th	0	0	0	0	0	0	0	0	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 25. SIT-UPS FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percen-tile	Classification Index								Percen-tile
	A	B	C	D	E	F	G	H	
100th	100	100	100	100	100	100	100	100	100th
95th	100	100	100	100	100	100	100	100	95th
90th	100	100	100	100	100	100	100	100	90th
85th	100	100	100	100	100	100	100	100	85th
80th	78	83	90	100	100	100	100	100	80th
75th	70	71	75	99	99	100	100	100	75th
70th	60	60	61	78	81	99	99	100	70th
65th	54	55	55	70	73	85	95	99	65th
60th	50	50	50	60	64	70	76	90	60th
55th	50	50	50	52	57	60	70	78	55th
50th	50	45	47	50	50	55	65	70	50th
45th	40	40	40	50	50	50	56	64	45th
40th	38	36	36	41	49	49	51	60	40th
35th	32	32	32	40	41	42	50	52	35th
30th	30	30	30	35	39	39	47	50	30th
25th	27	27	28	30	35	35	40	43	25th
20th	24	24	25	28	30	30	35	39	20th
15th	21	21	22	23	25	26	30	34	15th
10th	19	18	17	20	22	22	25	30	10th
5th	14	13	12	14	16	17	14	23	5th
0th	6	1	0	0	0	0	0	5	0th

TABLE 26. SHUTTLE RUN FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index A	B	C	D	E	F	G	H	Percentile
100th	9.0	9.0	8.0	9.0	8.5	8.5	9.0	8.3	100th
95th	10.0	10.0	9.9	9.8	9.8	9.4	9.5	9.1	95th
90th	10.2	10.1	10.0	10.0	10.0	9.6	9.6	9.4	90th
85th	10.3	10.3	10.1	10.0	10.0	9.8	9.8	9.5	85th
80th	10.5	10.5	10.4	10.2	10.1	10.0	9.9	9.6	80th
75th	10.7	10.6	10.5	10.3	10.2	10.0	10.0	9.7	75th
70th	10.9	10.7	10.6	10.5	10.4	10.1	10.1	9.8	70th
65th	11.0	10.8	10.7	10.6	10.5	10.3	10.2	9.9	65th
60th	11.0	10.9	10.9	10.8	10.6	10.4	10.3	10.0	60th
55th	11.0	11.0	11.0	10.9	10.8	10.5	10.4	10.1	55th
50th	11.2	11.0	11.0	11.0	10.9	10.5	10.5	10.2	50th
45th	11.2	11.1	11.2	11.0	11.0	10.7	10.6	10.3	45th
40th	11.4	11.4	11.3	11.1	11.0	10.8	10.8	10.4	40th
35th	11.5	11.5	11.5	11.3	11.2	11.0	10.9	10.5	35th
30th	11.6	11.8	11.6	11.4	11.4	11.1	11.0	10.6	30th
25th	11.8	12.0	11.8	11.5	11.5	11.2	11.3	10.8	25th
20th	12.0	12.0	12.0	11.7	11.7	11.5	11.6	11.0	20th
15th	12.2	12.2	12.0	12.0	12.0	11.8	11.8	11.3	15th
10th	12.6	12.5	12.2	12.3	12.2	12.0	12.0	11.7	10th
5th	13.2	13.0	13.0	12.8	12.6	12.6	12.8	12.1	5th
0th	15.0	20.0	15.7	18.0	14.3	14.5	22.0	16.0	0th

TABLE 27. STANDING BROAD JUMP FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index								Percentile
	A	B	C	D	E	F	G	H	
100th	6' 8"	6'10"	7' 2"	10' 0"	7' 9"	8'10"	8' 8"	8' 9"	100th
95th	6' 0"	6' 2"	6' 4"	6' 7"	6' 9"	7' 2"	7' 6"	7'11"	95th
90th	5'10"	5'11"	6' 2"	6' 3"	6' 6"	6'11"	7' 2"	7' 7"	90th
85th	5' 8"	5'10"	6' 0"	6' 2"	6' 4"	6' 9"	7' 0"	7' 6"	85th
80th	5' 7"	5' 9"	5' 9"	6' 0"	6' 2"	6' 8"	6'11"	7' 4"	80th
75th	5' 6"	5' 7"	5' 9"	5'11"	6' 0"	6' 6"	6' 9"	7' 3"	75th
70th	5' 5"	5' 6"	5' 7"	5'10"	6' 0"	6' 4"	6' 8"	7' 1"	70th
65th	5' 4"	5' 6"	5' 6"	5' 9"	5'10"	6' 3"	6' 5"	6'11"	65th
60th	5' 2"	5' 4"	5' 5"	5' 8"	5' 9"	6' 1"	6' 4"	6'10"	60th
55th	5' 2"	5' 3"	5' 4"	5' 6"	5' 8"	6' 0"	6' 2"	6' 8"	55th
50th	5' 1"	5' 2"	5' 3"	5' 6"	5' 6"	5'11"	6' 1"	6' 7"	50th
45th	5' 0"	5' 1"	5' 2"	5' 5"	5' 6"	5'10"	5'11"	6' 6"	45th
40th	4'11"	5' 0"	5' 1"	5' 4"	5' 4"	5' 8"	5'10"	6' 5"	40th
35th	4'10"	4'11"	5' 0"	5' 2"	5' 3"	5' 6"	5' 9"	6' 3"	35th
30th	4' 8"	4'10"	4'11"	5' 1"	5' 1"	5' 5"	5' 7"	6' 1"	30th
25th	4' 7"	4' 8"	4'10"	5' 0"	5' 0"	5' 3"	5' 5"	5'11"	25th
20th	4' 6"	4' 7"	4' 9"	4'10"	4'10"	5' 1"	5' 2"	5' 9"	20th
15th	4' 4"	4' 5"	4' 6"	4' 8"	4' 8"	4'11"	4'11"	5' 5"	15th
10th	4' 3"	4' 3"	4' 4"	4' 5"	4' 6"	4' 7"	4' 6"	5' 2"	10th
5th	4' 0"	4' 0"	4' 1"	4' 2"	4' 3"	4' 3"	4' 2"	4'10"	5th
0th	3' 0"	3' 0"	2' 2"	2'10"	2'10"	1' 8"	2' 2"	3' 2"	0th

TABLE 28. 50-YARD DASH FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index A	B	C	D	E	F	G	H	Percentile
100th	6.8	6.0	6.0	6.0	5.8	5.9	5.8	5.8	100th
95th	7.2	7.0	7.0	6.8	6.7	6.5	6.4	6.1	95th
90th	7.4	7.2	7.1	7.0	6.9	6.7	6.6	6.3	90th
85th	7.6	7.4	7.2	7.0	7.0	6.9	6.7	6.4	85th
80th	7.7	7.5	7.4	7.2	7.1	7.0	6.8	6.5	80th
75th	7.8	7.6	7.5	7.3	7.2	7.0	6.9	6.6	75th
70th	7.9	7.7	7.5	7.4	7.3	7.1	7.0	6.6	70th
65th	8.0	7.8	7.7	7.5	7.4	7.2	7.0	6.7	65th
60th	8.0	7.9	7.8	7.6	7.5	7.3	7.1	6.8	60th
55th	8.1	8.0	7.9	7.7	7.5	7.4	7.2	6.9	55th
50th	8.2	8.0	7.9	7.8	7.7	7.5	7.2	7.0	50th
45th	8.3	8.0	8.0	7.9	7.8	7.5	7.4	7.0	45th
40th	8.4	8.2	8.0	8.0	7.9	7.6	7.5	7.0	40th
35th	8.5	8.3	8.2	8.0	8.0	7.8	7.6	7.1	35th
30th	8.6	8.5	8.4	8.2	8.1	8.0	7.7	7.2	30th
25th	8.7	8.6	8.5	8.3	8.2	8.1	7.9	7.4	25th
20th	9.0	8.8	8.7	8.4	8.4	8.2	8.0	7.5	20th
15th	9.0	9.0	8.9	8.6	8.5	8.3	8.3	7.8	15th
10th	9.2	9.0	9.1	9.0	9.0	8.6	8.6	8.0	10th
5th	10.0	9.6	9.5	9.4	9.2	9.0	9.2	8.5	5th
0th	11.0	11.9	10.6	10.9	12.0	11.6	12.0	9.6	0th

TABLE 29. SOFTBALL THROW FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index								Percentile
	A	B	C	D	E	F	G	H	
100th	155	175	245	195	239	228	228	242	100th
95th	123	141	151	160	169	188	198	219	95th
90th	115	130	142	150	159	180	190	209	90th
85th	113	123	136	144	152	172	181	200	85th
80th	108	120	131	140	148	167	175	195	80th
75th	105	115	128	135	145	162	170	190	75th
70th	101	112	124	132	141	158	166	188	70th
65th	99	109	121	128	138	153	165	183	65th
60th	96	106	119	125	135	150	161	179	60th
55th	93	105	115	121	131	145	158	176	55th
50th	90	101	112	120	127	141	153	171	50th
45th	89	98	110	116	125	138	150	166	45th
40th	85	96	108	114	121	135	146	162	40th
35th	82	94	104	110	118	132	141	159	35th
30th	80	91	100	107	115	125	139	154	30th
25th	75	87	97	104	113	121	131	149	25th
20th	72	81	93	100	108	118	128	142	20th
15th	69	78	89	93	104	110	124	138	15th
10th	63	73	84	87	95	102	115	127	10th
5th	57	65	75	78	86	89	102	110	5th
0th	36	14	30	31	55	25	25	44	0th

TABLE 30. 600-YARD RUN-WALK FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index								Percentile
	A	B	C	D	E	F	G	H	
100th	1'30"	1'27"	1'32"	1'29"	1'34"	1'35"	1'30"	1'25"	100th
95th	1'53"	1'56"	1'56"	1'52"	1'51"	1'48"	1'44"	1'38"	95th
90th	2' 6"	2' 3"	2' 2"	1'59"	1'57"	1'51"	1'46"	1'42"	90th
85th	2'10"	2' 8"	2' 6"	2' 3"	2' 0"	1'54"	1'50"	1'44"	85th
80th	2'12"	2'11"	2' 9"	2' 6"	2' 2"	1'57"	1'52"	1'46"	80th
75th	2'15"	2'14"	2'11"	2'10"	2' 5"	1'59"	1'54"	1'48"	75th
70th	2'19"	2'16"	2'13"	2'12"	2' 8"	2' 2"	1'56"	1'51"	70th
65th	2'22"	2'19"	2'16"	2'14"	2'11"	2' 4"	1'59"	1'52"	65th
60th	2'24"	2'21"	2'19"	2'16"	2'15"	2' 5"	2' 0"	1'55"	60th
55th	2'28"	2'24"	2'21"	2'18"	2'16"	2' 8"	2' 3"	1'56"	55th
50th	2'31"	2'27"	2'24"	2'22"	2'19"	2'10"	2' 5"	1'59"	50th
45th	2'34"	2'30"	2'28"	2'24"	2'22"	2'12"	2' 9"	2' 1"	45th
40th	2'36"	2'34"	2'31"	2'27"	2'26"	2'15"	2'11"	2' 4"	40th
35th	2'40"	2'37"	2'34"	2'30"	2'29"	2'19"	2'14"	2' 8"	35th
30th	2'42"	2'41"	2'38"	2'35"	2'32"	2'23"	2'18"	2'12"	30th
25th	2'45"	2'44"	2'41"	2'40"	2'36"	2'27"	2'24"	2'16"	25th
20th	2'49"	2'53"	2'45"	2'46"	2'43"	2'32"	2'30"	2'23"	20th
15th	2'54"	3' 1"	2'50"	2'55"	2'53"	2'40"	2'38"	2'29"	15th
10th	3' 1"	3' 9"	3' 2"	3' 7"	3' 3"	2'55"	2'56"	2'41"	10th
5th	3'21"	3'33"	3'14"	3'30"	3'21"	3'21"	3'15"	3'11"	5th
0th	4'16"	5' 4"	4'34"	5' 6"	5' 8"	5' 0"	4'25"	5'14"	0th

TABLE 31. PULL-UPS FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	20	25	32	100th
95th	14	16	15	95th
90th	12	14	12	90th
85th	10	12	12	85th
80th	10	12	10	80th
75th	9	11	10	75th
70th	8	10	9	70th
65th	7	10	9	65th
60th	7	9	8	60th
55th	6	9	7	55th
50th	5	8	7	50th
45th	5	7	6	45th
40th	4	7	6	40th
35th	4	6	5	35th
30th	4	6	5	30th
25th	3	5	4	25th
20th	3	4	3	20th
15th	2	4	2	15th
10th	1	3	1	10th
5th	0	2	0	5th
0th	0	0	0	0th

TABLE 32. SIT-UPS FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	100	100	100	100th
95th	100	100	100	95th
90th	100	100	100	90th
85th	100	100	100	85th
80th	100	100	100	80th
75th	100	100	100	75th
70th	100	100	100	70th
65th	100	100	99	65th
60th	100	99	91	60th
55th	91	97	80	55th
50th	75	83	74	50th
45th	65	71	67	45th
40th	60	65	60	40th
35th	55	55	55	35th
30th	50	50	50	30th
25th	45	48	49	25th
20th	39	42	41	20th
15th	35	39	37	15th
10th	31	34	32	10th
5th	26	26	26	5th
0th	8	8	5	0th

TABLE 33. SHUTTLE RUN FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	8.3	8.0	8.0	100th
95th	9.2	9.0	9.0	95th
90th	9.4	9.1	9.0	90th
85th	9.6	9.2	9.2	85th
80th	9.7	9.3	9.3	80th
75th	9.8	9.5	9.4	75th
70th	9.9	9.5	9.5	70th
65th	9.9	9.6	9.6	65th
60th	10.0	9.7	9.6	60th
55th	10.0	9.8	9.7	55th
50th	10.1	9.9	9.8	50th
45th	10.2	10.0	10.0	45th
40th	10.2	10.0	10.0	40th
35th	10.4	10.1	10.1	35th
30th	10.5	10.2	10.2	30th
25th	10.6	10.3	10.4	25th
20th	10.9	10.5	10.6	20th
15th	11.0	10.8	10.9	15th
10th	11.2	11.1	11.1	10th
5th	11.7	11.4	11.5	5th
0th	15.0	15.0	16.6	0th

TABLE 34. STANDING BROAD JUMP FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	8'11"	8'10"	9' 8"	100th
95th	7' 9"	8' 2"	8' 6"	95th
90th	7' 6"	7'11"	8' 3"	90th
85th	7' 5"	7' 9"	8' 0"	85th
80th	7' 3"	7' 7"	7'11"	80th
75th	7' 0"	7' 6"	7' 9"	75th
70th	6'10"	7' 5"	7' 7"	70th
65th	6' 9"	7' 3"	7' 6"	65th
60th	6' 8"	7' 1"	7' 5"	60th
55th	6' 6"	7' 0"	7' 4"	55th
50th	6' 5"	7' 0"	7' 3"	50th
45th	6' 3"	6'10"	7' 1"	45th
40th	6' 2"	6' 9"	7' 0"	40th
35th	6' 0"	6' 7"	6'11"	35th
30th	5'10"	6' 6"	6' 9"	30th
25th	5' 8"	6' 5"	6' 7"	25th
20th	5' 6"	6' 4"	6' 6"	20th
15th	5' 3"	6' 1"	6' 3"	15th
10th	5' 0"	5'10"	6' 0"	10th
5th	4'10"	5' 5"	5' 7"	5th
0th	2'10"	4' 6"	3' 7"	0th

TABLE 35. 50-YARD DASH FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	6.0	5.6	5.6	100th
95th	6.3	6.0	6.0	95th
90th	6.4	6.1	6.1	90th
85th	6.5	6.2	6.2	85th
80th	6.6	6.3	6.2	80th
75th	6.7	6.4	6.3	75th
70th	6.9	6.5	6.4	70th
65th	7.0	6.5	6.4	65th
60th	7.0	6.5	6.5	60th
55th	7.1	6.6	6.6	55th
50th	7.1	6.7	6.6	50th
45th	7.2	6.8	6.7	45th
40th	7.3	6.8	6.8	40th
35th	7.4	6.9	6.8	35th
30th	7.5	7.0	6.9	30th
25th	7.6	7.1	7.0	25th
20th	7.8	7.2	7.0	20th
15th	8.0	7.3	7.2	15th
10th	8.1	7.5	7.3	10th
5th	8.6	7.9	7.7	5th
0th	10.4	10.0	10.6	0th

TABLE 36. SOFTBALL THROW FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	209	270	291	100th
95th	199	225	246	95th
90th	185	215	231	90th
85th	180	207	222	85th
80th	174	201	216	80th
75th	171	196	210	75th
70th	166	192	206	70th
65th	164	188	201	65th
60th	159	182	196	60th
55th	156	179	192	55th
50th	152	174	187	50th
45th	148	170	183	45th
40th	145	167	180	40th
35th	143	165	175	35th
30th	140	157	170	30th
25th	127	150	165	25th
20th	123	147	159	20th
15th	111	139	153	15th
10th	105	130	145	10th
5th	88	109	129	5th
0th	43	31	30	0th

TABLE 37. 600-YARD RUN-WALK FOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	1'29"	1'25"	1'23"	100th
95th	1'40"	1'32"	1'31"	95th
90th	1'41"	1'35"	1'34"	90th
85th	1'44"	1'37"	1'36"	85th
80th	1'46"	1'39"	1'38"	80th
75th	1'50"	1'41"	1'40"	75th
70th	1'52"	1'43"	1'42"	70th
65th	1'53"	1'45"	1'44"	65th
60th	1'55"	1'47"	1'45"	60th
55th	1'57"	1'49"	1'47"	55th
50th	1'58"	1'51"	1'49"	50th
45th	2' 1"	1'53"	1'51"	45th
40th	2' 3"	1'55"	1'54"	40th
35th	2' 5"	1'58"	1'57"	35th
30th	2' 8"	2' 1"	2' 0"	30th
25th	2'12"	2' 5"	2' 3"	25th
20th	2'16"	2' 9"	2' 8"	20th
15th	2'22"	2'15"	2'14"	15th
10th	2'34"	2'25"	2'22"	10th
5th	2'45"	2'37"	2'39"	5th
0th	3'12"	4'34"	4'45"	0th

Appendix B

TABLE 1. FLEXED ARM HANG FOR GIRLS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	68	60	74	48	64	62	80	49	100th
95th	29	27	36	37	46	36	34	30	95th
90th	16	18	32	30	30	30	25	23	90th
85th	15	16	25	26	26	25	21	18	85th
80th	13	14	20	24	23	22	18	17	80th
75th	10	12	18	22	18	18	16	16	75th
70th	8	9	16	22	17	16	14	15	70th
65th	7	8	14	20	17	16	13	14	65th
60th	7	6	12	15	15	14	11	12	60th
55th	6	5	10	12	12	12	10	12	55th
50th	5	4	9	11	11	11	9	10	50th
45th	4	4	6	10	10	9	8	9	45th
40th	4	2	5	7	8	8	7	8	40th
35th	2	1	3	6	7	7	7	7	35th
30th	1	1	2	6	6	6	5	6	30th
25th	1	0	1	5	5	4	5	5	25th
20th	0	0	0	3	3	3	3	4	20th
15th	0	0	0	1	0	2	2	2	15th
10th	0	0	0	0	0	1	2	1	10th
5th	0	0	0	0	0	0	1	1	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 2. SIT-UPS FOR GIRLS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	50	50	50	50	50	50	50	50	100th
95th	50	50	50	50	50	50	50	50	95th
90th	50	50	50	50	50	50	50	50	90th
85th	50	50	50	50	50	50	50	50	85th
80th	50	50	50	50	50	50	50	45	80th
75th	50	50	50	50	50	50	50	40	75th
70th	50	50	50	50	50	46	50	35	70th
65th	45	50	50	50	43	42	43	33	65th
60th	41	50	50	45	38	36	36	32	60th
55th	36	48	50	40	33	34	32	30	55th
50th	34	40	48	35	30	30	31	30	50th
45th	32	36	42	32	29	30	30	27	45th
40th	31	31	40	30	26	28	28	25	40th
35th	29	27	31	27	25	25	26	25	35th
30th	27	25	28	23	25	23	25	21	30th
25th	25	21	25	20	23	22	23	20	25th
20th	21	19	25	19	20	20	22	17	20th
15th	18	12	20	15	18	20	20	15	15th
10th	18	8	14	12	15	15	17	12	10th
5th	14	3	10	9	11	11	11	6	5th
0th	0	0	0	1	1	3	4	0	0th

TABLE 3. SHUTTLE RUN FOR GIRLS
Alaska Sample
Percentile Scores Based On Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	10.1	9.8	9.7	9.1	9.6	8.0	9.7	9.5	100th
95th	10.2	10.5	10.2	9.9	10.0	9.6	10.2	10.0	95th
90th	10.4	10.6	10.3	10.1	10.3	10.0	10.3	10.3	90th
85th	10.6	10.8	10.6	10.4	10.5	10.2	10.4	10.5	85th
80th	10.6	10.8	10.8	10.7	10.7	10.4	10.6	10.6	80th
75th	10.9	11.0	11.0	10.8	10.8	10.5	10.8	10.8	75th
70th	11.2	11.0	11.1	11.0	11.0	10.8	10.9	10.9	70th
65th	11.3	11.1	11.2	11.1	11.0	10.9	11.0	11.0	65th
60th	11.4	11.2	11.5	11.3	11.1	110	11.0	11.0	60th
55th	11.6	11.3	11.5	11.4	11.2	11.0	11.1	11.1	55th
50th	11.6	11.5	11.8	11.5	11.4	11.1	11.2	11.2	50th
45th	11.7	11.9	11.9	11.6	11.5	11.2	11.3	11.3	45th
40th	11.9	12.0	12.0	11.7	11.7	11.3	11.4	11.5	40th
35th	12.6	12.0	12.0	12.0	11.9	11.5	11.4	11.6	35th
30th	12.7	12.1	12.2	12.3	12.0	11.6	11.7	11.8	30th
25th	12.8	12.4	12.3	12.5	12.2	11.7	11.8	12.0	25th
20th	13.0	12.7	12.5	12.7	12.5	12.0	12.0	12.2	20th
15th	13.0	12.9	12.9	13.0	12.8	12.2	12.4	12.4	15th
10th	13.4	13.0	13.2	13.0	13.0	12.5	12.8	12.7	10th
5th	13.6	13.1	14.0	13.6	13.8	12.6	13.4	13.2	5th
0th	13.8	14.0	16.2	14.5	15.6	14.0	15.0	14.8	0th

TABLE 4. STANDING BROAD JUMP FOR GIRLS
Alaska Sample
Percentile Scores Based on Age

Percen-tile	Age 10	11	12	13	14	15	16	17	Percen-tile
100th	8' 1"	6' 9"	6'10"	6'10"	6' 6"	6' 6"	8' 6"	7' 4"	100th
95th	6' 2"	6' 2"	6' 1"	6' 4"	6' 4"	6' 3"	6' 3"	6' 6"	95th
90th	6' 1"	6' 0"	6' 0"	6' 2"	6' 1"	6' 0"	6' 0"	6' 3"	90th
85th	5' 8"	5'10"	5'10"	6' 0"	5'11"	5'11"	5'11"	6' 0"	85th
80th	5' 7"	5' 8"	5' 8"	5'11"	5'10"	5' 9"	5'10"	5'10"	80th
75th	5' 6"	5' 6"	5' 6"	5' 8"	5' 9"	5' 8"	5' 9"	5' 9"	75th
70th	5' 5"	5' 3"	5' 5"	5' 6"	5' 6"	5' 6"	5' 8"	5' 7"	70th
65th	5' 3"	5' 2"	5' 4"	5' 6"	5' 5	5' 6"	5' 8"	5' 6"	65th
60th	5' 2"	5' 2"	5' 3"	5' 5"	5' 4"	5' 5"	5' 7"	5' 6"	60th
55th	5' 0"	5' 1"	5' 0"	5' 2"	5' 3"	5' 4"	5' 6"	5' 5"	55th
50th	4' 9"	5' 0"	5' 0"	5' 0"	5' 2"	5' 3"	5' 5"	5' 4"	50th
45th	4' 8"	4'10"	4'10"	4'11"	5' 0"	5' 2"	5' 4"	5' 3"	45th
40th	4' 8"	4' 9"	4' 9"	4'10"	4'11"	5' 1"	5' 2"	5' 2"	40th
35th	4' 6"	4' 8"	4' 8"	4' 7"	4'10"	5' 1"	5' 1"	5' 0"	35th
30th	4' 6"	4' 6"	4' 6"	4' 6"	4' 9"	4'11"	4'11"	5' 0"	30th
25th	4' 5"	4' 6"	4' 6"	4' 5"	4' 7"	4' 8"	4'11"	4'11"	25th
20th	4' 3"	4' 4"	4' 5"	4' 4"	4' 4"	4' 7"	4' 9"	4' 9"	20th
15th	4' 3"	4' 3"	4' 3"	4' 2"	4' 3"	4' 5"	4' 7"	4' 8"	15th
10th	4' 1"	4' 2"	4' 0"	4' 0"	4' 1"	4' 3"	4' 4"	4' 6"	10th
5th	4' 0"	3'11"	3'10"	3' 5"	4' 0"	4' 0"	4' 1"	4' 2"	5th
0th	3' 2"	3' 7"	3' 4"	3' 4"	3' 1"	3' 2"	3' 7"	3' 8"	0th

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TABLE 5. 50-YARD DASH FOR GIRLS
Alaska Sample
Percentile Scores Based on Age

Percen-tile	Age								Percen-tile
	10	11	12	13	14	15	16	17	
100th	7.4	7.0	6.9	6.0	6.0	6.8	7.0	6.8	100th
95th	7.8	7.3	7.4	7.2	7.0	7.1	7.3	7.0	95th
90th	8.0	7.8	7.6	7.4	7.2	7.3	7.4	7.3	90th
85th	8.1	8.0	7.9	7.6	7.4	7.4	7.6	7.5	85th
80th	8.3	8.0	8.0	7.7	7.5	7.5	7.6	7.6	80th
75th	8.5	8.2	8.0	7.9	7.6	7.6	7.7	7.7	75th
70th	8.5	8.3	8.1	8.0	7.8	7.8	7.7	7.8	70th
65th	8.6	8.5	8.2	8.1	7.9	7.9	7.8	7.9	65th
60th	8.6	8.5	8.3	8.2	8.0	8.0	7.9	8.0	60th
55th	8.7	8.7	8.5	8.3	8.0	8.1	8.0	8.0	55th
50th	9.0	8.8	8.5	8.3	8.0	8.1	8.0	8.1	50th
45th	9.0	9.0	8.8	8.4	8.1	8.2	8.0	8.2	45th
40th	9.1	9.0	9.0	8.5	8.2	8.3	8.2	8.3	40th
35th	9.5	9.0	9.0	8.7	8.3	8.3	8.3	8.5	35th
30th	9.8	9.0	9.0	8.8	8.5	8.4	8.4	8.6	30th
25th	10.3	9.2	9.3	9.0	8.6	8.6	8.5	8.7	25th
20th	10.7	9.5	9.5	9.1	8.8	8.7	8.8	8.9	20th
15th	11.1	10.1	9.8	9.4	8.9	9.0	8.9	9.4	15th
10th	11.5	10.8	10.0	9.9	9.2	9.5	9.0	9.6	10th
5th	12.1	11.1	10.8	10.6	9.7	10.3	10.0	10.1	5th
0th	12.3	13.0	12.7	11.2	12.5	12.2	12.1	11.2	0th

TABLE 6. SOFTBALL THROW FOR GIRLS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	100	112	108	136	139	153	130	136	100th
95th	70	86	98	102	110	117	112	103	95th
90th	66	83	87	99	105	110	106	95	90th
85th	66	75	82	95	96	103	95	90	85th
80th	65	71	77	88	89	97	93	86	80th
75th	62	69	75	84	83	93	90	82	75th
70th	62	66	72	80	80	90	87	79	70th
65th	60	62	70	78	76	86	85	77	65th
60th	58	61	68	72	74	84	81	75	60th
55th	55	56	64	70	73	80	78	72	55th
50th	54	53	62	67	71	78	75	70	50th
45th	51	51	60	66	70	75	72	66	45th
40th	50	50	59	62	67	70	70	65	40th
35th	47	48	56	59	64	67	66	65	35th
30th	46	46	53	56	60	65	65	61	30th
25th	40	44	50	54	57	61	62	60	25th
20th	33	42	48	51	56	51	58	57	20th
15th	31	40	46	45	52	49	54	55	15th
10th	30	35	40	41	49	41	50	50	10th
5th	25	27	34	35	38	39	44	44	5th
0th	15	22	20	21	18	32	29	29	0th

TABLE 7. 600 YARD RUN FOR GIRLS
Alaska Sample
Percentile Scores Based On Age

Percentile	10	11	12	13	14	15	16	17	Percentile
100th	2' 7"	2' 8"	2' 2"	2' 3"	2' 0"	1'22"	1'51"	1'57"	100th
95th	2'20"	2'19"	2'14"	2'14"	2'10"	2'10"	2' 9"	2'12"	95th
90th	2'24"	2'24"	2'19"	2'24"	2'14"	2'14"	2'14"	2'14"	90th
85th	2'25"	2'26"	2'24"	2'32"	2'18"	2'17"	2'17"	2'20"	85th
80th	2'30"	2'28"	2'29"	2'37"	2'25"	2'22"	2'21"	2'22"	80th
75th	2'31"	2'36"	2'32"	2'39"	2'32"	2'25"	2'22"	2'24"	75th
70th	2'33"	2'38"	2'34"	2'41"	2'35"	2'26"	2'26"	2'26"	70th
65th	2'46"	2'41"	2'36"	2'43"	2'39"	2'28"	2'30"	2'29"	65th
60th	2'48"	2'42"	2'40"	2'48"	2'43"	2'33"	2'32"	2'36"	60th
55th	2'53"	2'44"	2'43"	2'50"	2'46"	2'37"	2'35"	2'40"	55th
50th	2'55"	2'48"	2'50"	2'57"	2'51"	2'44"	2'37"	2'43"	50th
45th	2'57"	2'52"	2'54"	3' 2"	2'53"	2'45"	2'39"	2'48"	45th
40th	3' 1"	2'56"	2'58"	3' 7"	2'57"	2'48"	2'43"	2'50"	40th
35th	3' 8"	3' 0"	3' 2"	3' 9"	2'59"	2'54"	2'48"	2'57"	35th
30th	3'13"	3' 6"	3' 7"	3'18"	3' 5"	2'56"	2'51"	3' 2"	30th
25th	3'20"	3' 8"	3'12"	3'34"	3' 7"	3' 1"	2'55"	3' 8"	25th
20th	3'22"	3'11"	3'17"	3'40"	3' 9"	3' 8"	3' 0"	3'12"	20th
15th	3'37"	3'15"	3'23"	3'44"	3'14"	3'20"	3' 5"	3'17"	15th
10th	3'52"	3'24"	3'44"	4' 3"	3'22"	3'36"	3'20"	3'27"	10th
5th	4'21"	3'40"	4'11"	4'27"	3'31"	3'48"	3'42"	3'54"	5th
0th	4'30"	5'27"	5'48"	5'10"	4'55"	4'41"	10' 0"	5'12"	0th

TABLE 8. PULL-UPS FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	8	21	20	32	23	17	20	26	100th
95th	6	8	10	11	15	12	14	15	95th
90th	4	6	7	9	12	10	11	13	90th
85th	3	5	6	7	10	10	10	12	85th
80th	3	4	5	7	9	8	10	11	80th
75th	3	3	4	5	8	7	9	10	75th
70th	2	3	3	4	7	7	9	10	70th
65th	2	2	3	3	6	6	7	9	65th
60th	2	2	2	2	5	6	7	8	60th
55th	1	2	2	2	5	5	6	8	55th
50th	1	1	2	2	5	5	6	7	50th
45th	1	1	2	2	4	5	6	7	45th
40th	0	1	1	1	3	4	5	6	40th
35th	0	1	1	1	3	3	5	6	35th
30th	0	0	0	1	2	3	5	5	30th
25th	0	0	0	0	2	2	4	5	25th
20th	0	0	0	0	1	2	4	4	20th
15th	0	0	0	0	1	1	3	4	15th
10th	0	0	0	0	0	1	2	3	10th
5th	0	0	0	0	0	0	1	1	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 9. SIT-UPS FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	 11	 12	 13	 14	 15	 16	 17	Percentile
100th	100	100	100	100	100	100	100	100	100th
95th	100	100	100	100	100	100	100	100	95th
90th	79	100	100	100	100	100	100	100	90th
85th	65	100	100	100	100	100	100	100	85th
80th	60	85	100	100	100	100	100	100	80th
75th	52	68	100	100	100	100	100	100	75th
70th	49	67	77	100	100	100	100	100	70th
65th	36	60	67	100	100	100	100	90	65th
60th	31	60	60	100	100	100	100	75	60th
55th	27	60	53	99	83	100	91	65	55th
50th	24	50	50	67	80	78	75	60	50th
45th	23	48	50	60	71	72	71	55	45th
40th	22	40	40	53	67	64	60	51	40th
35th	21	34	37	50	57	58	55	50	35th
30th	20	31	35	41	51	52	51	50	30th
25th	19	27	32	36	50	50	50	45	25th
20th	17	23	30	30	48	45	49	40	20th
15th	16	19	25	25	40	40	42	35	15th
10th	15	12	22	21	35	36	35	30	10th
5th	11	8	18	18	29	30	28	19	5th
0th	5	1	5	10	0	9	15	10	0th

TABLE 10. SHUTTLE RUN FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	10.0	10.0	9.3	9.2	8.6	8.3	8.7	8.2	100th
95th	10.3	10.1	10.0	9.6	9.0	9.2	9.0	9.1	95th
90th	10.6	10.5	10.0	10.0	9.4	9.4	9.2	9.2	90th
85th	10.9	10.6	10.1	10.0	9.5	9.4	9.3	9.3	85th
80th	11.0	10.7	10.3	10.2	9.6	9.5	9.4	9.4	80th
75th	11.0	10.9	10.5	10.2	9.8	9.6	9.5	9.5	75th
70th	11.0	11.0	10.5	10.4	9.9	9.8	9.5	9.6	70th
65th	11.1	11.0	11.0	10.5	10.0	9.8	9.6	9.6	65th
60th	11.5	11.3	11.0	10.6	10.0	9.9	9.6	9.8	60th
55th	11.6	11.5	11.0	10.8	10.0	10.0	9.8	9.8	55th
50th	11.7	11.6	11.2	11.0	10.1	10.0	9.8	9.9	50th
45th	11.8	11.7	11.4	11.0	10.2	10.0	9.9	10.0	45th
40th	11.9	11.8	11.6	11.0	10.4	10.0	10.0	10.0	40th
35th	12.0	12.0	11.8	11.2	10.5	10.2	10.3	10.1	35th
30th	12.1	12.0	12.0	11.5	10.8	10.3	10.4	10.5	30th
25th	12.3	12.1	12.0	11.7	11.0	10.6	10.5	10.5	25th
20th	12.4	12.3	12.1	12.0	11.1	10.7	10.7	10.7	20th
15th	12.5	12.5	12.3	12.0	11.2	11.0	11.0	11.0	15th
10th	12.8	13.0	12.5	12.4	11.7	11.5	11.2	11.3	10th
5th	13.3	13.3	13.0	13.3	12.5	11.7	12.3	12.3	5th
0th	13.8	14.5	13.5	14.1	13.5	14.5	13.9	17.5	0th

TABLE 11. STANDING BROAD JUMP FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	7' 2"	7'10"	6' 6"	7' 6"	8' 4"	8' 7"	8' 5"	9' 5"	100th
95th	6' 4"	6' 5"	6' 4"	7' 1"	7' 7"	8' 0"	8' 2"	8' 4"	95th
90th	5'10"	6' 0"	6' 2"	6' 8"	7' 4"	7' 8"	7'11"	8' 0"	90th
85th	5' 9"	5'10"	6' 0"	6' 4"	7' 0"	7' 5"	7' 8"	7'10"	85th
80th	5' 5"	5' 9"	5'11"	6' 3"	7' 0"	7' 3"	7' 7"	7' 9"	80th
75th	5' 4"	5' 8"	5'10"	6' 1"	6'10"	7' 0"	7' 5"	7' 8"	75th
70th	5' 4"	5' 5"	5' 8"	6' 0"	6' 8"	6'10"	7' 2"	7' 6"	70th
65th	5' 2"	5' 4"	5' 7"	5'10"	6' 6"	6' 9"	7' 1"	7' 6"	65th
60th	5' 2"	5' 4"	5' 5"	5'10"	6' 5"	6' 8"	7' 0"	7' 4"	60th
55th	5' 2"	5' 3"	5' 5"	5' 9"	6' 4"	6' 6"	6'10"	7' 3"	55th
50th	5' 0"	5' 2"	5' 4"	5' 8"	6' 3"	6' 5"	6'10"	7' 2"	50th
45th	5' 0"	5' 0"	5' 3"	5' 6"	6' 3"	6' 3"	6' 8"	7' 0"	45th
40th	5' 0"	4'11"	5' 1"	5' 5"	6' 1"	6' 1"	6' 8"	6'11"	40th
35th	4' 7"	4'10"	5' 0"	5' 3"	6' 0"	5'11"	6' 6"	6' 9"	35th
30th	4' 6"	4' 9"	4'10"	5' 3"	5'11"	5'10"	6' 6"	6' 8"	30th
25th	4' 6"	4' 8"	4' 8"	5' 0"	5' 9"	5'10"	6' 4"	6' 7"	25th
20th	4' 4"	4' 6"	4' 7"	5' 0"	5' 8"	5' 8"	6' 4"	6' 5"	20th
15th	4' 2"	4' 5"	4' 7"	4' 9"	5' 3"	5' 5"	6' 1"	6' 1"	15th
10th	3'10"	4' 4"	4' 3"	4' 8"	5' 2"	5' 3"	6' 0"	5' 9"	10th
5th	3' 3"	4' 2"	4' 0"	4' 1"	4'11"	4'10"	5' 8"	5' 5"	5th
0th	3' 3"	3' 8"	3' 8"	3' 3"	4' 0"	4' 7"	4' 8"	3' 6"	0th

TABLE 12. 50 YARD DASH FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	7.2	7.5	6.6	6.6	5.9	6.0	5.8	5.7	100th
95th	8.0	7.6	7.0	7.0	6.6	6.4	6.1	6.0	95th
90th	8.1	7.7	7.3	7.1	6.8	6.5	6.3	6.1	90th
85th	8.2	7.9	7.4	7.4	6.9	6.6	6.5	6.2	85th
80th	8.3	8.0	7.7	7.5	7.0	6.7	6.5	6.3	80th
75th	8.5	8.0	7.9	7.6	7.0	6.8	6.5	6.4	75th
70th	8.6	8.1	8.0	7.6	7.2	6.9	6.6	6.5	70th
65th	8.7	8.3	8.1	7.7	7.2	7.0	6.7	6.5	65th
60th	8.9	8.4	8.2	7.7	7.3	7.0	6.7	6.6	60th
55th	8.9	8.4	8.3	7.9	7.4	7.1	6.8	6.6	55th
50th	9.0	8.5	8.5	8.1	7.5	7.2	6.8	6.7	50th
45th	9.0	8.6	8.6	8.2	7.6	7.3	6.9	6.7	45th
40th	9.1	8.6	8.8	8.4	7.6	7.4	6.9	6.8	40th
35th	9.2	8.8	8.9	8.5	7.7	7.4	6.9	7.0	35th
30th	9.4	8.9	9.0	8.7	7.9	7.5	7.0	7.0	30th
25th	9.8	9.0	9.0	8.8	7.9	7.6	7.1	7.1	25th
20th	10.2	9.1	9.1	9.0	8.2	7.9	7.1	7.2	20th
15th	10.8	9.2	9.5	9.0	8.2	8.0	7.5	7.5	15th
10th	11.3	9.6	10.0	9.2	8.6	8.3	7.7	7.6	10th
5th	12.2	10.2	10.3	9.9	9.0	9.0	8.0	8.0	5th
0th	13.0	11.1	11.0	12.5	10.3	9.8	9.9	9.2	0th

TABLE 13. SOFTBALL THROW FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age								Percentile
	10	11	12	13	14	15	16	17	
100th	138	142	174	183	216	221	260	266	100th
95th	132	138	142	169	192	212	212	228	95th
90th	129	133	140	156	180	198	198	221	90th
85th	126	129	138	153	174	190	191	212	85th
80th	119	127	132	150	170	180	188	205	80th
75th	110	122	128	144	167	175	184	200	75th
70th	104	120	127	135	160	167	181	195	70th
65th	99	117	124	130	157	163	175	190	65th
60th	92	115	122	129	155	160	171	188	60th
55th	90	114	119	127	152	155	164	185	55th
50th	87	112	115	123	147	150	162	180	50th
45th	86	107	113	120	139	148	160	178	45th
40th	85	102	110	117	133	147	158	175	40th
35th	84	100	108	114	128	141	156	170	35th
30th	83	97	102	111	126	136	153	164	30th
25th	82	89	96	107	120	134	149	160	25th
20th	82	87	95	101	117	125	144	157	20th
15th	80	83	87	99	114	118	135	148	15th
10th	72	78	82	94	97	110	131	134	10th
5th	63	75	70	89	79	102	126	122	5th
0th	60	69	52	54	50	94	100	70	0th

TABLE 14. 600 YARD RUN FOR BOYS
Alaska Sample
Percentile Scores Based on Age

Percentile	Age 10	11	12	13	14	15	16	17	Percentile
100th	2' 3"	2' 6"	2' 1"	1'51"	1'37"	1'28"	1'20"	1'29"	100th
95th	2'11"	2'10"	2' 4"	2' 2"	1'46"	1'39"	1'34"	1'35"	95th
90th	2'24"	2'15"	2' 6"	2' 5"	1'50"	1'42"	1'36"	1'39"	90th
85th	2'28"	2'17"	2'10"	2' 9"	1'54"	1'45"	1'38"	1'41"	85th
80th	2'34"	2'20"	2'12"	2'10"	1'54"	1'46"	1'40"	1'42"	80th
75th	2'35"	2'21"	2'13"	2'12"	1'57"	1'48"	1'42"	1'45"	75th
70th	2'36"	2'23"	2'16"	2'14"	2' 0"	1'50"	1'43"	1'46"	70th
65th	2'37"	2'26"	2'20"	2'15"	2' 2"	1'52"	1'45"	1'48"	65th
60th	2.39"	2'28"	2'22"	2'16"	2' 4"	1'55"	1'47"	1'49"	60th
55th	2'41"	2'29"	2'23"	2'18"	2' 5"	1'59"	1'49"	1'50"	55th
50th	2'44"	2'30"	2'28"	2'21"	2' 8"	2' 2"	1'50"	1'52"	50th
45th	2'46"	2'32"	2'30"	2'24"	2' 9"	2' 4"	1'54"	1'54"	45th
40th	2'49"	2'33"	2'32"	2'26"	2'11"	2' 5"	1'56"	1'55"	40th
35th	2'58"	2'36"	2'36"	2'32"	2'14"	2' 6"	1'58"	1'58"	35th
30th	3' 4"	2'39"	2'38"	2'34"	2'17"	2'12"	2' 2"	2' 0"	30th
25th	3'12"	2'41"	2'45"	2'37"	2'23"	2'13"	2' 7"	2' 5"	25th
20th	3'18"	2'45"	2'47"	2'42"	2'26"	2'20"	2'12"	2'10"	20th
15th	3'22"	2'58"	2'55"	2'47"	2'36"	2'38"	2'23"	2'19"	15th
10th	3'30"	3' 5"	3' 3"	2'54"	2'45"	2'52"	2'35"	2'42"	10th
5th	4'28"	3'24"	3'14"	3'23"	2'55"	3'15"	2'44"	2'59"	5th
0th	4'55"	4'12"	3'41"	4'11"	3'31"	4'26"	5' 0"	4'12"	0th

TABLE 15. FLEXED ARM HANG FOR GIRLS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	38	68	74	47	53	80	55	62	77	100th
95th	31	56	33	32	34	35	36	31	33	95th
90th	30	33	24	25	30	30	29	21	25	90th
85th	23	21	18	20	23	27	25	16	21	85th
80th	14	15	17	19	21	25	23	13	18	80th
75th	12	14	16	16	17	23	18	12	16	75th
70th	10	10	14	13	15	22	16	10	15	70th
65th	10	8	12	12	13	20	15	8	14	65th
60th	8	6	10	12	12	17	14	7	12	60th
55th	8	5	8	10	11	15	13	7	11	55th
50th	7	4	7	8	11	14	10	6	10	50th
45th	6	2	6	6	9	12	9	5	8	45th
40th	4	1	5	4	7	10	8	3	7	40th
35th	4	1	4	4	6	6	8	2	7	35th
30th	4	1	3	2	5	6	7	2	6	30th
25th	3	0	3	1	3	4	6	0	5	25th
20th	1	0	1	0	1	2	4	0	3	20th
15th	0	0	0	0	0	1	3	0	2	15th
10th	0	0	0	0	0	0	1	0	2	10th
5th	0	0	0	0	0	0	0	0	1	5th
0th	0	0	0	0	0	0	0	0	0	0th

TABLE 16. PULL-UPS FOR ELEMENTARY AND JUNIOR HIGH BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX								Percentile
	A	B	C	D	E	F	G	H	
100th	8	10	13	20	17	21	23	32	100th
95th	6	8	8	7	11	13	15	14	95th
90th	6	6	5	5	10	10	13	11	90th
85th	5	6	5	5	7	8	12	10	85th
80th	4	5	3	4	6	7	10	9	80th
75th	3	4	3	4	5	5	7	8	75th
70th	3	4	2	3	5	5	7	8	70th
65th	3	3	2	3	4	4	6	7	65th
60th	3	2	2	2	3	3	5	6	60th
55th	2	2	1	2	2	3	5	6	55th
50th	2	2	1	2	2	2	5	5	50th
45th	1	1	1	1	2	2	3	4	45th
40th	1	1	1	1	1	2	2	3	40th
35th	1	1	1	1	1	1	2	3	35th
30th	0	0	0	1	1	1	2	2	30th
25th	0	0	0	0	0	0	2	2	25th
20th	0	0	0	0	0	0	1	1	20th
15th	0	0	0	0	0	0	0	0	15th
10th	0	0	0	0	0	0	0	0	10th
5th	0	0	0	0	0	0	0	0	5th
0th	0	0	0	0	0	0	0	0	0th

TABLE 17. PULL-UPS FOR HIGH SCHOOL BOYS

ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX A	CLASSIFICATION INDEX B	CLASSIFICATION INDEX C	Percentile
100th	26	22	11	100th
95th	14	15	10	95th
90th	12	14	9	90th
85th	11	12	9	85th
80th	10	11	8	80th
75th	10	10	8	75th
70th	9	10	7	70th
65th	8	9	6	65th
60th	8	8	6	60th
55th	7	7	5	55th
50th	7	7	5	50th
45th	6	6	5	45th
40th	6	6	4	40th
35th	5	5	4	35th
30th	5	5	3	30th
25th	4	4	3	25th
20th	4	4	3	20th
15th	4	3	2	15th
10th	2	3	2	10th
5th	1	2	1	5th
0th	0	1	0	0th

TABLE 18. SIT-UPS FOR GIRLS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX A	B	C	D	E	F	G	H	HSG	Percentile
100th	50	50	50	50	50	50	50	50	50	100th
95th	50	50	50	50	50	50	50	50	50	95th
90th	50	50	50	50	50	50	50	50	50	90th
85th	50	50	50	50	50	50	50	46	50	85th
80th	50	50	50	50	50	50	50	43	50	80th
75th	50	50	50	50	50	50	50	33	50	75th
70th	50	50	50	50	50	50	50	30	42	70th
65th	50	48	50	50	50	47	47	29	36	65th
60th	50	36	50	50	45	40	42	27	33	60th
55th	49	34	50	50	42	36	40	25	31	55th
50th	46	32	50	50	40	32	30	25	30	50th
45th	38	30	44	45	37	30	30	23	30	45th
40th	31	27	40	42	35	28	29	22	27	40th
35th	30	25	34	40	32	25	27	20	25	35th
30th	28	22	30	31	30	23	25	20	24	30th
25th	20	17	25	27	26	20	25	17	22	25th
20th	19	13	22	25	25	20	22	15	20	20th
15th	18	10	20	22	23	18	20	13	16	15th
10th	13	10	15	18	20	13	17	11	14	10th
5th	8	4	5	7	10	10	13	10	10	5th
0th	6	0	0	0	3	1	10	1	0	0th

TABLE 19. SIT-UPS FOR ELEMENTARY AND JUNIOR HIGH BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX								Percentile
	A	B	C	D	E	F	G	H	
100th	100	100	100	100	100	100	100	100	100th
95th	79	100	100	100	100	100	100	100	95th
90th	64	100	100	100	100	100	100	100	90th
85th	60	100	100	100	100	100	100	100	85th
80th	57	80	100	85	100	100	100	100	80th
75th	52	70	90	67	100	100	100	100	75th
70th	49	66	67	67	100	100	100	100	70th
65th	42	60	64	62	100	100	100	100	65th
60th	42	58	60	60	68	100	100	96	60th
55th	36	50	58	55	59	96	88	83	55th
50th	28	50	40	50	50	79	79	75	50th
45th	24	48	38	40	50	67	71	70	45th
40th	22	40	32	40	41	55	61	60	40th
35th	20	34	31	32	39	50	52	55	35th
30th	20	30	25	31	34	41	49	50	30th
25th	19	26	22	29	30	40	44	50	25th
20th	17	24	22	25	26	35	42	48	20th
15th	14	22	21	23	23	34	40	40	15th
10th	12	17	17	17	19	25	35	35	10th
5th	10	15	8	10	15	18	21	30	5th
0th	5	7	1	4	10	5	20	0	0th

TABLE 20. SIT-UPS FOR HIGH SCHOOL BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX			Percentile
	A	B	C	
100th	100	100	100	100th
95th	100	100	100	95th
90th	100	100	100	90th
85th	100	100	100	85th
80th	100	100	99	80th
75th	100	100	99	75th
70th	100	100	83	70th
65th	99	100	68	65th
60th	80	100	58	60th
55th	74	100	55	55th
50th	61	92	52	50th
45th	60	75	51	45th
40th	54	65	50	40th
35th	50	60	50	35th
30th	50	55	50	30th
25th	47	50	50	25th
20th	40	50	36	20th
15th	36	42	23	15th
10th	31	31	19	10th
5th	22	25	12	5th
0th	9	15	10	0th

TABLE 21. SHUTTLE RUN FOR GIRLS
ALASKA SAMPLE
PERCENTILE SCORES BASED ON CLASSIFICATION INDEX

Percentile	CLASSIFICATION INDEX									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	10.4	10.4	10.0	9.7	9.1	9.1	9.8	8.0	9.2	100th
95th	10.6	10.6	10.2	10.0	10.1	9.9	10.0	9.4	10.1	95th
90th	10.8	10.6	10.4	10.4	10.2	10.3	10.1	10.0	10.3	90th
85th	11.0	10.7	10.8	10.5	10.5	10.5	10.4	10.3	10.4	85th
80th	11.1	11.0	10.8	10.6	10.6	10.8	10.6	10.5	10.6	80th
75th	11.1	11.0	10.9	10.8	10.7	10.9	10.8	10.7	10.8	75th
70th	11.3	11.2	11.0	10.8	10.8	11.0	11.0	10.9	10.9	70th
65th	11.5	11.8	11.1	11.0	11.0	11.0	11.0	11.1	11.0	65th
60th	11.5	11.5	11.1	11.0	11.1	11.2	11.0	11.3	11.0	60th
55th	11.7	11.6	11.3	11.4	11.2	11.3	11.0	11.5	11.1	55th
50th	12.0	11.8	11.7	11.5	11.4	11.4	11.2	11.6	11.2	50th
45th	12.2	12.0	11.9	11.8	11.6	11.5	11.2	11.7	11.2	45th
40th	12.4	12.2	12.0	12.0	11.6	11.7	11.5	12.0	11.4	40th
35th	12.6	12.6	12.0	12.0	11.8	11.8	11.5	12.1	11.5	35th
30th	12.8	12.7	12.1	12.0	12.0	12.0	11.8	12.3	11.7	30th
25th	13.0	12.7	12.3	12.3	12.2	12.4	12.0	12.4	11.8	25th
20th	13.0	13.0	12.5	12.5	12.8	12.5	12.2	12.5	12.0	20th
15th	13.0	13.0	12.9	12.8	12.9	12.7	12.4	12.8	12.4	15th
10th	13.0	13.0	13.0	13.1	13.0	13.1	12.8	13.2	12.5	10th
5th	13.0	13.7	13.5	13.9	13.8	13.3	13.3	13.9	13.0	5th
0th	13.1	14.0	14.0	16.2	14.5	14.0	14.4	15.6	15.0	0th

TABLE 22. SHUTTLE RUN FOR HIGH SCHOOL BOYS
Alaska Sample
Percentile Scores Based on Classification Index

Percentile	Classification Index			Percentile
	C	B	A	
100th	8.1	9.0	9.5	100th
95th	9.0	9.2	9.5	95th
90th	9.2	9.3	9.6	90th
85th	9.3	9.4	9.6	85th
80th	9.4	9.4	9.7	80th
75th	9.5	9.6	9.8	75th
70th	9.5	9.6	9.8	70th
65th	9.6	9.7	9.9	65th
60th	9.7	9.8	9.9	60th
55th	9.8	9.8	10.0	55th
50th	9.9	9.9	10.0	50th
45th	10.0	10.0	10.1	45th
40th	10.0	10.0	10.2	40th
35th	10.1	10.0	10.3	35th
30th	10.5	10.2	10.4	30th
25th	10.5	10.4	10.5	25th
20th	10.7	10.5	10.7	20th
15th	11.0	10.7	10.8	15th
10th	11.6	11.1	11.0	10th
5th	12.6	11.6	11.3	5th
0th	17.5	12.2	12.3	0th

TABLE 23. SHUTTLE RUN FOR ELEMENTARY AND JUNIOR HIGH SCHOOL BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX								Percentile
	A	B	C	D	E	F	G	H	
100th	10.5	9.3	10.0	9.6	8.6	9.3	8.9	8.3	100th
95th	10.7	10.1	10.0	10.0	9.9	9.5	9.0	9.0	95th
90th	10.9	10.3	10.2	10.0	10.0	9.6	9.4	9.3	90th
85th	11.0	10.5	10.5	10.1	10.0	9.7	9.5	9.4	85th
80th	11.0	10.5	10.6	10.2	10.1	10.0	9.5	9.5	80th
75th	11.0	10.8	10.8	10.5	10.3	10.0	9.7	9.6	75th
70th	11.0	10.9	11.0	10.6	10.5	10.0	9.8	9.8	70th
65th	11.1	11.0	11.0	10.7	10.5	10.1	10.0	9.9	65th
60th	11.2	11.2	11.0	11.0	10.6	10.3	10.1	10.0	60th
55th	11.6	11.4	11.3	11.1	10.9	10.5	10.2	10.0	55th
50th	11.8	11.6	11.4	11.2	11.0	10.6	10.6	10.0	50th
45th	11.9	11.6	11.7	11.4	11.0	10.7	10.8	10.2	45th
40th	12.0	11.8	11.8	11.5	11.0	11.0	11.0	10.3	40th
35th	12.0	11.9	11.9	11.6	11.3	11.1	11.0	10.4	35th
30th	12.1	12.0	12.0	11.8	11.5	11.6	11.1	10.5	30th
25th	12.1	12.0	12.1	11.9	11.9	11.7	11.3	10.8	25th
20th	12.2	12.2	12.3	12.0	12.0	12.0	11.5	11.0	20th
15th	12.4	12.5	12.5	12.2	12.4	12.2	11.9	11.1	15th
10th	13.3	12.8	12.8	12.6	12.5	12.4	12.2	11.5	10th
5th	13.8	13.2	13.2	13.0	13.1	13.3	12.6	12.0	5th
0th	14.5	13.4	14.5	13.0	13.8	14.1	13.6	13.5	0th

TABLE 24. 50 YARD DASH FOR GIRLS, ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	8.0	7.7	7.0	6.9	6.0	6.1	7.0	7.0	6.8	100th
95th	8.0	8.0	7.5	7.1	7.1	7.0	7.4	7.2	7.1	95th
90th	8.1	8.0	7.8	7.5	7.3	7.1	7.4	7.6	7.3	90th
85th	8.5	8.1	8.0	7.8	7.4	7.3	7.5	7.7	7.5	85th
80th	8.6	8.3	8.0	8.0	7.6	7.5	7.7	7.8	7.6	80th
75th	8.7	8.4	8.0	8.0	7.7	7.6	7.8	7.9	7.7	75th
70th	8.7	8.5	8.1	8.2	7.9	7.8	7.9	8.0	7.7	70th
65th	8.9	8.7	8.2	8.3	8.0	7.9	8.0	8.0	7.8	65th
60th	9.0	8.8	8.3	8.4	8.1	8.0	8.0	8.1	7.9	60th
55th	9.0	8.8	8.5	8.5	8.2	8.1	8.1	8.2	8.0	55th
50th	9.0	9.0	8.5	8.5	8.3	8.2	8.2	8.2	8.0	50th
45th	9.0	9.0	8.6	8.6	8.4	8.3	8.3	8.3	8.2	45th
40th	9.3	9.0	8.8	8.9	8.6	8.4	8.5	8.3	8.3	40th
35th	9.6	9.0	9.0	9.0	8.9	8.5	8.6	8.4	8.4	35th
30th	9.9	9.2	9.0	9.0	9.0	8.7	8.6	8.5	8.5	30th
25th	10.4	9.3	9.0	9.4	9.2	8.9	8.8	8.7	8.6	25th
20th	10.9	10.0	9.5	9.5	9.2	9.1	8.9	8.9	8.7	20th
15th	11.2	10.3	9.8	9.9	9.5	9.4	9.1	9.1	9.0	15th
10th	11.9	11.0	10.3	10.1	10.0	9.6	9.3	10.4	9.4	10th
5th	12.9	12.1	11.0	11.0	10.9	10.3	9.9	11.0	10.0	5th
0th	13.0	12.3	11.5	12.7	12.0	11.0	12.5	12.0	12.2	0th

TABLE 25. 50-YARD DASH FOR ELEMENTARY AND JUNIOR HIGH BOYS, ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX								Percentile
	A	B	C	D	E	F	G	H	
100th	7.2	7.0	7.0	6.6	7.0	6.7	5.9	6.0	100th
95th	7.8	7.5	7.7	7.2	7.1	6.8	6.6	6.4	95th
90th	8.0	7.5	7.9	7.4	7.3	7.0	6.8	6.5	90th
85th	8.1	7.7	8.0	7.5	7.5	7.1	6.9	6.6	85th
80th	8.3	7.8	8.0	7.7	7.6	7.2	7.0	6.8	80th
75th	8.5	8.0	8.0	7.8	7.6	7.2	7.0	6.9	75th
70th	8.6	8.1	8.2	7.9	7.8	7.3	7.3	7.0	70th
65th	8.7	8.2	8.4	8.1	7.9	7.3	7.4	7.0	65th
60th	8.9	8.3	8.5	8.2	8.0	7.5	7.4	7.1	60th
55th	8.9	8.5	8.5	8.2	8.0	7.6	7.5	7.1	55th
50th	9.0	8.5	8.6	8.4	8.1	7.7	7.6	7.3	50th
45th	9.2	8.6	8.8	8.5	8.4	7.9	7.6	7.3	45th
40th	9.5	8.7	9.0	8.8	8.5	8.0	7.9	7.5	40th
35th	9.7	8.8	9.0	9.0	8.6	8.2	8.0	7.5	35th
30th	9.8	8.9	9.0	9.0	8.8	8.6	8.0	7.6	30th
25th	9.9	9.0	9.1	9.0	8.8	8.7	8.2	7.7	25th
20th	10.4	9.2	9.1	9.2	9.0	8.9	8.2	8.0	20th
15th	10.8	9.3	9.7	9.5	9.2	9.0	8.7	8.2	15th
10th	11.4	9.6	10.4	9.8	9.9	9.0	9.1	8.3	10th
5th	12.0	10.0	11.0	10.4	10.3	10.0	9.8	8.8	5th
0th	13.0	13.0	11.1	12.0	12.5	11.0	10.0	9.5	0th

TABLE 26. 50-YARD DASH FOR HIGH SCHOOL BOYS, ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX			Percentile
	A	B	C	
100th	5.7	5.8	6.6	100th
95th	6.0	6.3	6.6	95th
90th	6.1	6.4	6.6	90th
85th	6.2	6.5	6.7	85th
80th	6.4	6.6	6.8	80th
75th	6.4	6.6	6.9	75th
70th	6.5	6.7	6.9	70th
65th	6.5	6.8	7.0	65th
60th	6.5	6.8	7.1	60th
55th	6.6	6.8	7.2	55th
50th	6.7	6.8	7.4	50th
45th	6.8	6.9	7.4	45th
40th	6.8	7.0	7.5	40th
35th	6.9	7.0	7.6	35th
30th	7.0	7.0	7.7	30th
25th	7.0	7.1	7.8	25th
20th	7.2	7.2	7.8	20th
15th	7.4	7.5	7.8	15th
10th	7.8	7.5	7.7	10th
5th	8.0	7.5	8.0	5th
0th	9.2	7.8	9.9	0th

TABLE 27. SOFTBALL THROW FOR GIRLS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	99	79	102	99	111	139	125	153	136	100th
95th	75	71	87	93	101	106	117	115	110	95th
90th	72	66	83	82	95	101	111	102	100	90th
85th	70	65	75	78	86	96	106	100	93	85th
80th	69	56	72	76	84	93	102	93	90	80th
75th	66	53	71	75	80	87	97	90	86	75th
70th	66	52	68	70	77	83	88	80	85	70th
65th	62	51	66	67	72	80	82	79	80	65th
60th	62	50	65	62	70	77	80	76	78	60th
55th	62	50	61	59	69	74	75	75	76	55th
50th	61	48	60	58	64	72	71	72	73	50th
45th	60	48	60	55	62	70	70	69	70	45th
40th	56	46	57	52	62	66	67	67	67	40th
35th	53	46	54	50	59	64	64	63	65	35th
30th	50	43	50	50	57	59	63	61	63	30th
25th	44	37	47	46	56	54	59	58	60	25th
20th	40	35	45	44	54	51	52	55	57	20th
15th	33	30	41	42	49	45	50	48	54	15th
10th	31	25	39	39	44	40	46	46	50	10th
5th	27	22	33	26	37	36	39	38	43	5th
0th	27	15	20	21	18	21	29	26	29	0th

TABLE 23. SOFTBALL THROW FOR ELEMENTARY AND JUNIOR HIGH BOYS
ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percen-tile	CLASSIFICATION INDEX								Percen-tile
	A	B	C	D	E	F	G	H	
100th	132	144	142	150	174	189	190	222	100th
95th	130	134	138	141	160	160	178	211	95th
90th	121	126	132	139	148	157	174	198	90th
85th	108	122	127	138	135	153	168	185	85th
80th	101	112	127	130	131	150	163	179	80th
75th	99	108	123	127	129	144	160	175	75th
70th	97	103	122	124	128	141	155	170	70th
65th	90	100	119	120	127	137	154	169	65th
60th	89	98	117	117	125	132	147	164	60th
55th	89	94	114	117	120	131	136	160	55th
50th	88	92	110	114	118	129	134	156	50th
45th	86	88	108	111	115	127	132	153	45th
40th	85	86	105	110	112	122	129	150	40th
35th	85	85	101	108	110	120	127	147	35th
30th	84	84	96	105	103	116	124	141	30th
25th	82	83	88	96	102	115	122	135	25th
20th	80	82	82	94	98	113	116	130	20th
15th	76	80	78	89	95	109	112	120	15th
10th	68	75	74	87	93	101	100	110	10th
5th	63	69	67	71	84	94	93	88	5th
0th	60	60	65	52	79	87	54	50	0th

TABLE 29. SOFTBALL THROW FOR HIGH SCHOOL BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX			Percentile
	A	B	C	
100th	266	228	162	100th
95th	228	211	160	95th
90th	220	195	158	90th
85th	209	191	156	85th
80th	201	185	153	80th
75th	197	180	150	75th
70th	193	178	146	70th
65th	190	174	143	65th
60th	187	165	140	60th
55th	184	163	139	55th
50th	180	160	138	50th
45th	177	158	136	45th
40th	172	154	135	40th
35th	168	149	133	35th
30th	163	147	132	30th
25th	159	141	130	25th
20th	155	135	118	20th
15th	150	132	106	15th
10th	140	127	101	10th
5th	125	120	94	5th
0th	70	100	70	0th

TABLE 30. 600-YARD RUN FOR GIRLS
ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	2' 8"	2'15"	2' 7"	2' 4"	2' 2"	2' 3"	2' 0"	2'12"	1'51"	100th
95th	2'17"	2'17"	2'18"	2'15"	2'13"	2'13"	2' 8"	2'22"	2' 8"	95th
90th	2'21"	2'20"	2'20"	2'21"	2'17"	2'18"	2'14"	2'24"	2'14"	90th
85th	2'25"	2'23"	2'24"	2'28"	2'25"	2'27"	2'16"	2'27"	2'17"	85th
80th	2'27"	2'25"	2'27"	2'32"	2'31"	2'33"	2'19"	2'30"	2'21"	80th
75th	2'30"	2'27"	2'31"	2'38"	2'33"	2'37"	2'24"	2'35"	2'23"	75th
70th	2'32"	2'32"	2'35"	2'41"	2'36"	2'40"	2'26"	2'39"	2'25"	70th
65th	2'36"	2'36"	2'36"	2'42"	2'40"	2'44"	2'28"	2'46"	2'28"	65th
60th	2'40"	2'40"	2'40"	2'44"	2'43"	2'45"	2'33"	2'50"	2'33"	60th
55th	2'48"	2'40"	2'42"	2'47"	2'45"	2'47"	2'36"	2'55"	2'36"	55th
50th	2'51"	2'43"	2'48"	2'52"	2'49"	2'54"	2'46"	3' 0"	2'39"	50th
45th	2'53"	2'45"	2'54"	2'58"	2'51"	2'58"	2'49"	3' 6"	2'42"	45th
40th	2'58"	2'49"	2'57"	3' 1"	2'55"	3' 5"	2'55"	3'10"	2'46"	40th
35th	3' 3"	2'53"	3' 0"	3' 4"	2'59"	3' 7"	2'58"	3'14"	2'50"	35th
30th	3' 7"	2'54"	3' 5"	3' 7"	3' 3"	3'10"	3' 2"	3'17"	2'54"	30th
25th	3' 8"	3' 7"	3' 7"	3'13"	3' 9"	3'16"	3' 8"	3'22"	2'58"	25th
20th	3' 9"	3'11"	3'10"	3'21"	3'17"	3'25"	3'16"	3'32"	3' 3"	20th
15th	3'10"	3'14"	3'15"	3'36"	3'25"	3'38"	3'30"	3'40"	3'11"	15th
10th	3'18"	3'18"	3'24"	3'44"	3'37"	3'54"	3'41"	3'51"	3'20"	10th
5th	3'27"	3'47"	4'10"	4'16"	4' 8"	4'12"	3'54"	4'40"	3'39"	5th
0th	3'28	4'21"	4'30"	5'48"	5'30"	4'55"	5'10"	5' 2"	10' 0"	0th

TABLE 31. 600-YARD RUN FOR ELEMENTARY AND JUNIOR HIGH BOYS
ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percen-	CLASSIFICATION INDEX								Percen-
tile	A	B	C	D	E	F	G	H	tile
100th	2' 3"	2' 4"	2' 4"	1'57"	1'41"	1'50"	1'36"	1'21"	100th
95th	2' 8"	2' 6"	2'12"	2' 4"	2' 3"	1'58"	1'39"	1'38"	95th
90th	2'16"	2' 9"	2'13"	2' 6"	2' 5"	2' 1"	1'50"	1'44"	90th
85th	2'22"	2'13"	2'15"	2' 9"	2' 8"	2' 5"	1'53"	1'46"	85th
80th	2'25"	2'20"	2'15"	2'12"	2'11"	2' 7"	1'54"	1'47"	80th
75th	2'27"	2'21"	2'18"	2'16"	2'13"	2' 8"	1'58"	1'50"	75th
70th	2'29"	2'23"	2'24"	2'19"	2'14"	2'10"	1'59"	1'54"	70th
65th	2'31"	2'28"	2'28"	2'22"	2'17"	2'11"	2' 4"	1'54"	65th
60th	2'33"	2'29"	2'30"	2'23"	2'18"	2'12"	2' 7"	1'59"	60th
55th	2'35"	2'30"	2'32"	2'24"	2'21"	2'15"	2'11"	2' 2"	55th
50th	2'39"	2'32"	2'36"	2'28"	2'24"	2'16"	2'12"	2' 4"	50th
45th	2'44"	2'34"	2'36"	2'31"	2'26"	2'20"	2'15"	2' 5"	45th
40th	2'57"	2'35"	2'38"	2'31"	2'28"	2'22"	2'17"	2' 7"	40th
35th	3' 5"	2'38"	2'40"	2'33"	2'33"	2'23"	2'21"	2'11"	35th
30th	3' 6"	2'39"	2'44"	2'37"	2'37"	2'28"	2'25"	2'15"	30th
25th	3' 7"	2'40"	2'47"	2'38"	2'42"	2'40"	2'28"	2'22"	25th
20th	3'10"	2'48"	2'56"	2'46"	2'48"	2'44"	2'35"	2'34"	20th
15th	3'26"	3' 0"	3' 3"	2'54"	2'58"	2'48"	2'43"	2'42"	15th
10th	4' 4"	3'10"	3'14"	3' 3"	3' 7"	3' 1"	2'52"	2'67"	10th
5th	4'25"	3'59"	3'31"	3'24"	3'40"	3'20"	3' 6"	3' 2"	5th
0th	4'55"	4'30"	3'55"	4'12"	3'50"	3'39"	3'46"	5' 0"	0th

TABLE 32. 600-YARD RUN FOR HIGH SCHOOL BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX			Percentile
	A	B	C	
100th	1' 27"	1' 20"	1' 39"	100th
95th	1' 34"	1' 34"	1' 42"	95th
90th	1' 38"	1' 37"	1' 45"	90th
85th	1' 40"	1' 40"	1' 49"	85th
80th	1' 42"	1' 42"	1' 53"	80th
75th	1' 43"	1' 44"	1' 57"	75th
70th	1' 45"	1' 46"	2' 0"	70th
65th	1' 47"	1' 48"	2' 3"	65th
60th	1' 48"	1' 49"	2' 4"	60th
55th	1' 50"	1' 50"	2' 5"	55th
50th	1' 50"	1' 52"	2' 6"	50th
45th	1' 53"	1' 55"	2' 14"	45th
40th	1' 54"	1' 57"	2' 22"	40th
35th	1' 56"	1' 58"	2' 28"	35th
30th	2' 0"	1' 59"	2' 31"	30th
25th	2' 5"	2' 2"	2' 34"	25th
20th	2' 10"	2' 7"	2' 37"	20th
15th	2' 15"	2' 18"	2' 40"	15th
10th	2' 32"	2' 40"	2' 42"	10th
5th	2' 59"	2' 57"	2' 59"	5th
0th	3' 26"	3' 5"	4' 12"	0th

TABLE 33. STANDING BROAD JUMP FOR GIRLS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX									Percentile
	A	B	C	D	E	F	G	H	HSG	
100th	6' 1"	8' 1"	6' 4"	6' 9"	6'10"	6'10"	6' 6"	6' 5"	9' 6"	100th
95th	5' 8"	6' 3"	6' 2"	6' 1"	6' 2"	6' 4"	6' 0"	6' 2"	6' 5"	95th
90th	5' 6"	6' 1"	6' 0"	6' 0"	5'11"	6' 1"	6' 0"	6' 1"	6' 2"	90th
85th	5' 5"	5'10"	5'11"	5'10"	5'11"	6' 0"	5'11"	5'11"	6' 0"	85th
80th	5' 2"	5' 7"	5' 9"	5' 7"	5' 8"	5'10"	5'10"	5' 7"	5'11"	80th
75th	5' 2"	5' 6"	5' 6"	5' 6"	5' 7"	5' 8"	5' 8"	5' 6"	5' 9"	75th
70th	5' 2"	5' 3"	5' 4"	5' 5"	5' 6"	5' 7"	5' 6"	5' 6"	5' 8"	70th
65th	5' 2"	5' 2"	5' 3"	5' 4"	5' 5"	5' 5"	5' 5"	5' 4"	5' 7"	65th
60th	5' 2"	5' 1"	5' 1"	5' 2"	5' 4"	5' 4"	5' 5"	5' 2"	5' 6"	60th
55th	5' 0"	4'11"	4'11"	5' 0"	5' 2"	5' 3"	5' 4"	5" 1"	5' 6"	55th
50th	4'11"	4' 8"	4'10"	5' 0"	5' 0"	5' 1"	5' 3"	4'10"	5' 5"	50th
45th	4' 9"	4' 7"	4'10"	4'10"	4'11"	5' 0"	5' 2"	4' 9"	5' 4"	45th
40th	4' 9"	4' 7"	4' 8"	4'10"	4'10"	4'10"	5' 2"	4' 8"	5' 2"	40th
35th	4' 9"	4' 6"	4' 7"	4' 8"	4' 8"	4' 9"	5' 1"	4' 7"	5' 1"	35th
30th	4' 5"	4' 6"	4' 6"	4' 8"	4' 7"	4' 8"	5' 0"	4' 5"	5' 0"	30th
25th	4' 5"	4' 5"	4' 6"	4' 6"	4' 6"	4' 5"	4'11"	4' 4"	4'11"	25th
20th	4' 3"	4' 4"	4' 4"	4' 6"	4' 5"	4' 4"	4' 7"	4' 4"	4' 9"	20th
15th	4' 3"	4' 3"	4' 3"	4' 3"	4' 3"	4' 3"	4' 5"	4' 2"	4' 8"	15th
10th	4' 0"	4' 2"	4' 2"	3'10"	4' 0"	4' 2"	4' 4"	3'10"	4' 6"	10th
5th	4' 0"	4' 0"	3'11"	3' 6"	4' 0"	3'10"	4' 2"	3' 8"	4' 2"	5th
0th	4' 0"	4' 0"	3' 5"	3' 2"	3' 4"	3' 1"	3' 9"	3' 6"	3' 2"	0th

TABLE 34. STANDING BROAD JUMP FOR ELEMENTARY AND JUNIOR HIGH BOYS

ALASKA SAMPLE

Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX								Percentile
	A	B	C	D	E	F	G	H	
100th	6' 4"	6' 4"	6' 8"	7'10"	7' 4"	7' 1"	8' 3"	8' 4"	100th
95th	6' 0"	6' 0"	6' 6"	6' 3"	6' 7"	6'11"	7' 4"	8' 0"	95th
90th	5' 9"	5'10"	6' 1"	6' 1"	6' 3"	6' 5"	6'11"	7' 8"	90th
85th	5' 9"	5' 8"	5'11"	6' 0"	6' 2"	6' 4"	6' 9"	7' 6"	85th
80th	5' 6"	5' 5"	5' 9"	5'10"	6' 0"	6' 4"	6' 8"	7' 4"	80th
75th	5' 4"	5' 5"	5' 8"	5' 9"	6' 0"	6' 3"	6' 6"	7' 2"	75th
70th	5' 2"	5' 4"	5' 6"	5' 8"	5'11"	6' 2"	6' 4"	7' 1"	70th
65th	5' 2"	5' 3"	5' 4"	5' 7"	5'10"	6' 1"	6' 3"	7' 0"	65th
60th	5' 2"	5' 2"	5' 4"	5' 5"	5' 9"	6' 0"	6' 2"	6'10"	60th
55th	5' 2"	5' 0"	5' 3"	5' 4"	5' 8"	5'11"	6' 0"	6' 9"	55th
50th	5' 0"	5' 0"	5' 2"	5' 4"	5' 6"	5'10"	6' 0"	6' 8"	50th
45th	4' 9"	5' 0"	5' 1"	5' 3"	5' 5"	5' 9"	5'11"	6' 6"	45th
40th	4' 7"	4'10"	5' 0"	5' 2"	5' 4"	5' 8"	5'10"	6' 5"	40th
35th	4' 6"	4' 8"	4'10"	5' 2"	5' 3"	5' 6"	5'10"	6' 4"	35th
30th	4' 5"	4' 7"	4' 8"	5' 0"	5' 1"	5' 4"	5' 7"	6' 2"	30th
25th	4' 4"	4' 6"	4' 7"	5' 0"	4'11"	5' 3"	5' 5"	5'10"	25th
20th	4' 3"	4' 5"	4' 7"	4' 9"	4' 9"	5' 0"	5' 3"	5' 9"	20th
15th	4' 1"	4' 4"	4' 4"	4' 9"	4' 8"	4' 8"	5' 3"	5' 8"	15th
10th	3'10"	4' 3"	4' 2"	4' 6"	4' 6"	4' 7"	5' 0"	5' 5"	10th
5th	3' 9"	3' 8"	4' 0"	4' 4"	4' 1"	4' 0"	4' 8"	5' 0"	5th
0th	3' 3"	3' 4"	3' 3"	3' 8"	3' 3"	3' 3"	4' 0"	4' 0"	0th

TABLE 35. STANDING BROAD JUMP FOR HIGH SCHOOL BOYS
ALASKA SAMPLE
Percentile Scores Based on Classification Index

Percentile	CLASSIFICATION INDEX			Percentile
	A	B	C	
100th	9' 5"	8' 11"	7' 5"	100th
95th	8' 4"	8' 0"	7' 2"	95th
90th	8' 0"	7' 11"	6' 11"	90th
85th	7' 10"	7' 8"	6' 8"	85th
80th	7' 9"	7' 5"	6' 7"	80th
75th	7' 8"	7' 4"	6' 6"	75th
70th	7' 6"	7' 2"	6' 5"	70th
65th	7' 5"	6' 11"	6' 4"	65th
60th	7' 4"	6' 10"	6' 4"	60th
55th	7' 2"	6' 9"	6' 3"	55th
50th	7' 1"	6' 9"	6' 3"	50th
45th	7' 0"	6' 8"	6' 2"	45th
40th	6' 10"	6' 7"	6' 1"	40th
35th	6' 9"	6' 6"	6' 0"	35th
30th	6' 8"	6' 5"	5' 11"	30th
25th	6' 6"	6' 4"	5' 10"	25th
20th	6' 5"	6' 3"	5' 4"	20th
15th	6' 2"	6' 1"	4' 11"	15th
10th	6' 0"	5' 10"	4' 7"	10th
5th	5' 6"	5' 5"	4' 0"	5th
0th	3' 6"	4' 10"	3' 6"	0th

Appendix C

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor
Physical Education for Men

Dear Principal:

The United States Office of Education, Cooperative Research Branch, is instituting a nation-wide survey designed to determine the status of selected aspects of physical fitness of boys and girls, grades 5 through 12. Both the President's Council on Fitness and the American Association for Health, Physical Education, and Recreation have endorsed this project.

The first national survey of the physical fitness of school children in America was conducted by the Project Director during the school year 1957-1958. These data have been used for comparative purposes by numerous investigators (British, Japanese, Danish, Latin American). While these data are based on a sample of youngsters representative of the population at that time, there is serious question as to the appropriateness of the norms for today's youth. Since 1958, there has been an increased emphasis on physical fitness and the tests are no longer new. Many children have had an opportunity to practice or at least try the tests. This was not the case in 1957.

In order to obtain an accurate cross section of boys and girls, the Survey Research Center of The University of Michigan designed and drew a sample. This was done by selecting school districts, and then one or two schools within each district. Your school was one which fell into our sample. The superintendent of your district has been contacted previously, and the school lists were obtained from him.

Now we need your cooperation in obtaining a list of classrooms in each grade 5 through 12, that is included in your school. This list must be such that each student (Grades 5-12) is associated with one, and only one, of these classes. Most schools use homerooms for this purpose. A form is enclosed for the listing. When you return the completed form, we will further select some classrooms. Although all the classes need to be listed, only two or three may fall into the sample.

The items selected for the survey include seven physical performance tests involving running, jumping, throwing and muscular endurance. Two periods will more than suffice for the physical performance battery. The entire battery will be administered by a trained testor with the aid of local physical education teachers. We shall supply the necessary forms and equipment; your school will not be asked to assume any of the cost involved. Our schedule calls for contacting you in April to finalize arrangements for administering the tests at your convenience.

We would like to assure you that the information obtained is completely confidential. We are interested only in the nation-wide conclusions. As in the 1957-1958 survey no school will be identified with the results. If you desire we will be happy to give you the test results for your schools.

Your cooperation in this research project is deeply appreciated. If you have any further questions please write or call me collect.

Very sincerely,

Paul Hunsicker
Project Director

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor
Physical Education for Men

As you probably know we are in the process of taking another National Sample and will be developing new norms for the Youth Fitness Test. It is hoped that the data can be obtained before ______________.

I am in the process of securing the names of people who would be willing to assume the responsibility of supervising the administration of the Youth Fitness Tests in their area. This is usually done with the cooperation of the local physical education teachers. In most instances this would not involve the testing of more than 150 boys and girls. Would you or could you send the name of someone who would take on this responsibility? Shortly after I have the names of the individuals involved I shall call several regional meetings or meet with the individuals personally to discuss the test administration as well as the schools and specific classrooms involved. I should mention that I will have secured clearances from the various school authorities so this will be no problem.

Your prompt response will be appreciated.

Sincerely yours,

Paul Hunsicker
Project Director

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor
Physical Education for Men

I am planning to stop in ____________________ enroute west and would like to visit with the person in charge of physical education to discuss plans for the administration of the Youth Fitness Tests possibly during the week of ____________. If this is convenient I shall give you a specific date after I finalize my travel plans.

Sincerely yours,

Paul Hunsicker
Project Director

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor
Physical Education for Men

To: Participants in Youth Fitness Project

From: Paul Hunsicker, Director, Youth Fitness Project

Subject: New York Meeting

I am delighted that you are able to attend the New York meeting and look forward to seeing you in person. The following comments seem pertinent:

1. Place of meeting: Roosevelt Hotel, 45th and Madison Avenue, New York. Telephone: Murray Hill 6-9200 (Area code 212)

2. Time of meeting: 9:00 a.m. - 12:00 noon, Saturday, April 18, 1964

3. Hotel reservations: Those coming in from out-of-town have a reservation at the Hotel Roosevelt. The charge will be billed to me.

4. Travel arrangements: Those using commercial carrier are requested to use the enclosed tax-exempt form (Form 731). Dinner Friday night or breakfast Saturday could be conveniently charged to your hotel bill at the Roosevelt. Those traveling by privately-owned vehicle will be reimbursed at the rate of 8 cents per mile.

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor
Physical Education for Men

As you no doubt know the Youth Fitness Test norms are being revised. I am hoping that we will be able to complete the testing sometime before the end of the current school year.

______________________________ is one of the sample units that have been selected. We are drawing between 100 and 150 students, grades 5-12, from your area and we would appreciate your cooperation in supervising the administration of the test battery. Your superintendent has been apprised of the project and I am in the process of working out some of the details. Would it be convenient to meet with you or someone whom you might care to designate during the week of __________ to discuss the Youth Fitness Project?

Sincerely yours,

Paul Hunsicker
Project Director

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor, Michigan
Physical Education for Men

On ______________________ we mailed you a request for additional information germane to a few subjects for whom data was incomplete. In most cases the requests were either for birthdate, height, weight or grade. In the event that our request was overlooked in the usual ado at the beginning of a new school year, we are enclosing an additional form. Would you please take a few minutes to complete it and return it to us as soon as possible?

Thanks again for your time and effort. We hope you are having a successful school year.

Very cordially,

Paul Hunsicker, Director
Youth Fitness Project

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor, Michigan
Physical Education for Men

Dear Principal:

We understand that you must be very occupied these days, but the pressure of events forces us to turn to you once more for your cooperation.

It has occurred to us that the original mailing may have been misplaced and that this may be why we have received no answer from you to date. Therefore we are sending you another set of forms.

We have received good cooperation from the great majority of the sample of schools contacted through our letter of ___________. However, in order to put this study on a thoroughly scientific basis we need to include all the originally selected schools without substitutions. We request once more your kind cooperation.

If you have sent in these forms already, can you please so indicate on the enclosed form (Part A below). If there has been some unavoidable delay, please tell us about it (Part B below).

Very truly yours,

Paul Hunsicker, Director
Professor of Physical Education

PH/jb

A) We mailed you the completed forms on or about _________________

B) We expect to mail you the completed forms on or about ________

Our delay is due to ____

____

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor, Michigan
Physical Education for Men

Dear

Thank you for your prompt return of the Youth Fitness Test data. The time and effort you have devoted to this research is deeply appreciated. The majority of the data collected appear very accurate and complete, but as is always the case in projects of this size, some incomplete information is unavoidable.

Will you be kind enough to send us promptly the information we are missing for the students in your area whom we have listed below? If either height, weight or grade is requested we would like the information as applicable to the student at the time he was tested.

Student Name	School & City	Home Room	Information Needed is Circled			
1.			Height	Weight	Grade	Birthdate
2.			Height	Weight	Grade	Birthdate
3.			Height	Weight	Grade	Birthdate
4.			Height	Weight	Grade	Birthdate
5.			Height	Weight	Grade	Birthdate
6.			Height	Weight	Grade	Birthdate

Cordially,

Paul Hunsicker, Director

Appendix D

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor
Physical Education for Men

Instructions for Listing Classes

We have devised a simple method for selecting with equal probability students in the grades 5-12 which your school contains. To do this efficiently, we need a list of all "classrooms" (grades 5-12) from which we will select a few classrooms. The students in these classes selected will constitute the sample of students from your school.

The list of classrooms for our use must be such that each student (grades 5-12) is associated with one and only one of these classes.

We shall follow any system of identification that your school uses. Most schools use "homerooms" for this purpose. If your system of identification is different from "homerooms", please describe it in the space below.

WE ASK YOUR KIND COOPERATION FOR THE FOLLOWING:

1) LIST ALL "CLASSROOMS" IN ANY OF THE GRADES 5 THROUGH 12 IN YOUR SCHOOL. Identify (in Col. 2) each "classroom" by whatever method you use in your school; i.e., homerooms, section number, teacher, etc.

2) Place a check in Col. 3 for each class that contains from 20-40 students. If class size does not fall between 20-40 students, please indicate size in Col. 4.

3) PLEASE RETURN THE COMPLETED LIST at your earliest convenience -- preferably within a few days. We enclose a return envelope.

Survey Research Center, The University of Michigan

School ______________________ Place______________________

(1) Grade of Classroom 5 through 12 only	(2) Classroom Identification (each classroom identified by whatever system used - homeroom, section number, teacher, etc.)	(3) Check this column if class size is from 20-40	(4) If class size is not 20-40 write size in this column	(5) Notes or comments

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Appendix E

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor, Michigan
Physical Education for Men

Youth Fitness Test (Girls)

Identification Number ____________ Home Room ________________

Name ____________________________ School ___________________

Grade ____________ City ________________ State ____________

Exponent

Date of Birth ____________________ __________
Month Day Year

Height ________ (inches) __________

Weight ________ (pounds) __________

Sum of Exponents __________

Classification __________

Tests

Pull-up ________ (number)

Sit-up ________ (number)

Shuttle Run ________ (seconds)

Standing Broad Jump ________ (feet and inches)

50-Yard Dash ________ (seconds)

Softball Throw ________ (feet)

600 Yard Run-Walk ________ (minutes and seconds)

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor, Michigan
Physical Education for Men

Youth Fitness Test (Boys)

Identification Number ______________ Home Room ______________

Name ______________________________ School ________________

Grade ______ City __________________ State ______________

Exponent

Date of Birth __________________ ___________
Month Day Year

Height ________ (inches) ___________

Weight ________ (pounds) ___________

Sum of Exponents ___________

Classification ___________

Tests

Pull-up	________	(number)
Sit-up	________	(number)
Shuttle Run	________	(seconds)
Standing Broad Jump	________	(feet and inches)
50-Yard Dash	________	(seconds)
Softball Throw	________	(feet)
600 Yard Run-Walk	________	(minutes and seconds)

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Appendix F

YOUTH FITNESS PROJECT
The University of Michigan
Ann Arbor, Michigan
Physical Education for Men

Primary Sampling Units

Central Cities

1. Los Angeles
2. Chicago
3. Detroit
4. Philadelphia
5. New York

Suburbs, Central Cities

1. Los Angeles
2. Chicago
3. Detroit
4. Philadelphia
5. New York
6. San Francisco
7. Boston
8. New Jersey
9. Washington, D.C.

Non-Self Representing Counties

1. Black Hawk, Iowa
2. Butler, Ohio
3. Clark, Arkansas
4. Currituck, North Carolina
5. Dade, Florida
6. Franklin, Nebraska
7. Hickman, Tennessee
8. Jefferson, Missouri
9. King, Washington
10. Knox, Ohio
11. Logan, Colorado
12. Lycoming, Pennsylvania
13. Marion, Ohio
14. Mercer, New Jersey
15. Mississippi, Arkansas
16. New London, Connecticut
17. Onondaga, New York
18. Orange, Florida
19. Plumas, California
20. Rankin, Mississippi
21. Richmond, Virginia
22. St. Joseph, Michigan
23. Salt Lake, Utah
24. San Diego, California
25. Sheboygan, Wisconsin
26. Stoddard, Missouri
27. Taylor, Texas
28. Toledo, Ohio
29. Tulsa, Oklahoma
30. Watauga, North Carolina
31. York, Maine

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